TECHNOLOGY DEPT.

FLIGHT

MAGAZINE

APRIL 1954
35 cents

TAYLORCRAFT 225 RANCH WAGON

(See page 22)

"On the Way"

Regulus surface-to-surface guided missiles, now in production for the Navy at Chance Vought Aircraft, are designed to be launched from ships, submarines or shore bases.

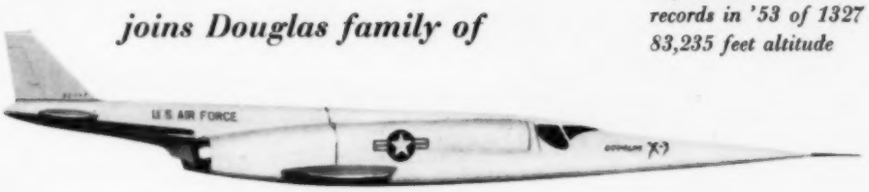
Chance Vought Aircraft INCORPORATED

DALLAS, TEXAS

Stiletto-shaped twin jet

joins Douglas family of

Skyrocket—set world records in '53 of 1327 mph, 83,235 feet altitude



Skystreak—world speed record 1948, 650 mph

high-speed research aircraft

—the supersonic Douglas X-3

Now to the record-breaking Skystreak, the Douglas Skyrocket and the record-holding carrier-based Skyray, add this important experimental plane—the Douglas X-3.

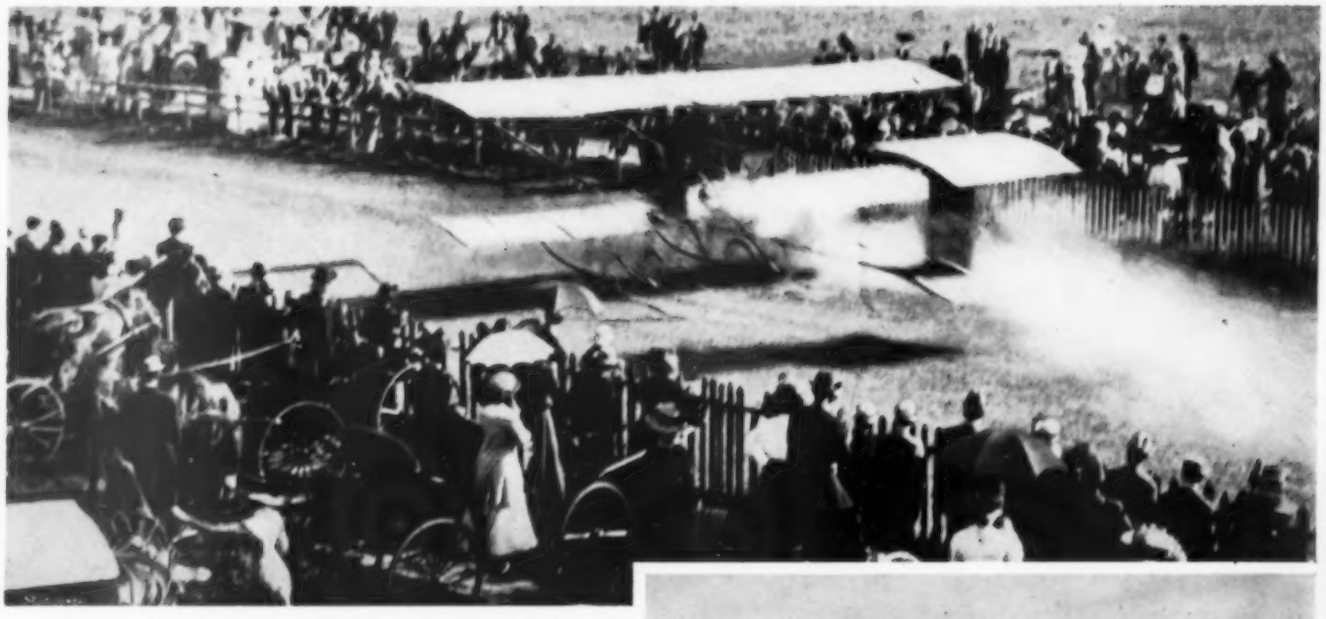
Performance is secret, but a little can be told. Longer, heavier than a DC-3 transport, X-3 flies on wings smaller than a DC-3's tail—using conventional jet engines for *sustained* flight. X-3 has already contributed basic facts on insulation, refrigeration, and the use of heat-resistant *titanium*, while its payload of research instruments has been used to study the stresses and strains of flight at supersonic speeds.

Design of X-3 is another example of Douglas leadership in aviation. *Faster and farther with a bigger payload* is a basic Douglas rule.

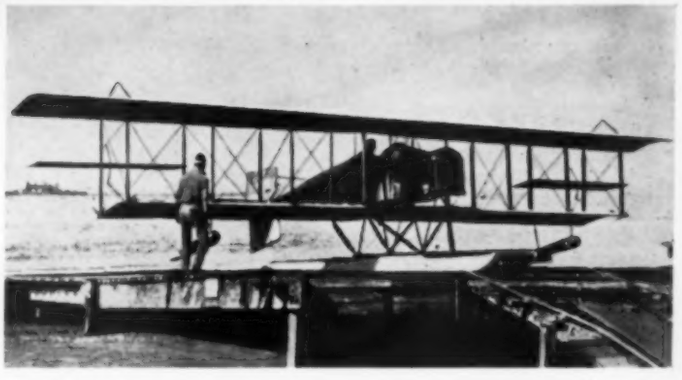
Enlist to fly with the U.S. Air Force

Depend on *DOUGLAS* **First in Aviation**

Hold the horses! Here comes the flying machine!



IN 1910 crowds gathered—and horses shied—whenever men set out to try their wings. That year Allan Lockheed exhibited a pusher-type bi-plane to a group of excited Californians, above. It flew successfully, and a few years later, Allan and his brother Malcolm Lockheed introduced an airplane of their own design (right) to the public at the 1915 Pacific International Exposition in San Francisco. It was the first successful tractor tandem seaplane, and became the first of a long line of Lockheed aircraft!



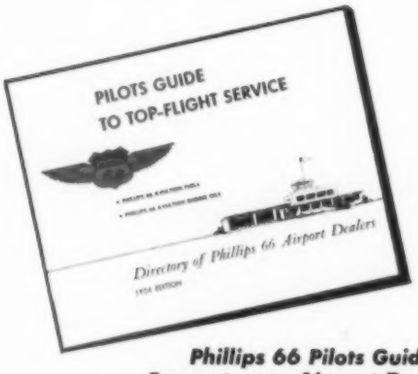
THE NEW U. S. AIR FORCE RC-121C, one of Lockheed's latest, carries America's most powerful search radar to high altitudes for line-of-sight surveillance. Thanks to the fuel-saving combination of high compression engines and high octane aviation gasoline (for which the RC-121C has tremendous capacity) these flying radar stations can stay airborne for extended periods of time. Similar radar planes are in production at Lockheed for the U. S. Navy which plans to use them as far-ranging forward eyes of the fleet.

Progress in aviation depends on progress in many other industries. In the field of aviation fuels, Phillips Petroleum Company has pioneered important improvements.

Many years ago Phillips scientists blended natural gasoline components to make the super aviation fuel of the times. Then, Phillips *originated* and was first to manufacture Di-isopropyl and HF Alkylate, two aviation fuel components of great value to modern, high-speed performance. Today Phillips produces tremendous quantities of jet fuel along with even larger amounts of super-high octane aviation gasoline.

Think first of Phillips for the finest aviation products.

AVIATION DIVISION
PHILLIPS PETROLEUM COMPANY
BARTLESVILLE, OKLAHOMA



Phillips 66 Pilots Guide
Free at your Airport Dealers'

Used along with a handy Phillips 66 Credit Card, this directory of Phillips 66 Airport Dealers will be helpful to pilots.

Phillips 66

AVIATION PRODUCTS

AIR Report
Significant Trends and News

MORE AIRPORT TRAFFIC MOVEMENTS IN 1953 THAN IN 1952 are reported by CAA, the figures for fields with control towers being 16,815,133 in 1953 as against 15,814,213 in 1952. Busiest field was Midway Airport at Chicago.

AIRCRAFT AND PILOTS ARE ON THE INCREASE in Connecticut, that state's aeronautics department reporting 1,967 pilot licenses and 536 aircraft registrations issued during the first 10 months of 1953 as compared to 1,848 pilot licenses and 524 aircraft registrations for 12 months in 1952. The state licenses pilots and registers civilian aircraft.

NEW BUSINESS FOR BEECH AIRCRAFT CORPORATION announced in March included 50 additional T-34A Mentor trainers for the USAF; $18,000,000 worth of additional wings for Lockheed T-33 jet trainers and $44,447,680 worth of additional C-26 ground power units for jet planes ordered by USAF.

NEW BUSINESS FOR CESSNA AIRCRAFT announced last month included a $1,000,000 letter contract for production engineering and tooling design for the USAF jet-powered T-37A side-by-side trainer; a "substantial" subcontract for production of the horizontal stabilizer section of the Boeing B-52 jet bomber, and an order for maior overhaul of 70 Cessna L-19A "Bird Dog" planes. . . . **FAMILIARIZATION WITH THE TURBINE-POWERED CESSNA XL-19B THROUGH FLIGHT AND MAINTENANCE STUDIES** will be given by Cessna Aircraft to an Army group. The XL-19B is powered by a Boeing 502-8 turbo-prop engine. . . . **CESSNA LIGHTPLANE EXPORTS** in January were 29 planes valued at $250,000 and dominated total U. S. lightplane exports for the month totaling 44 planes valued at $323,558, according to E. T. Charlton, Cessna export manager.

A NEW SMALL GAS TURBINE is being developed by General Electric for helicopters and they offer promise for fixed-wing lightplanes and as booster engines for large planes with reciprocating engines. The new engine is the XT-58 for the Navy. No other details were disclosed.

A NEW EDO FLOAT FOR CESSNA MODEL 180 INSTALLATION is priced at $3,995, which is $1,605 less than last year's price for the smaller 2125 Model float. The new float is Model 2870 and Edo Vice President A. M. Brown, Jr., says its larger size shows no increase in drag over the smaller model.

NEW NAVION 260 COOLING MODIFICATIONS by Spartan Aircraft Co. at Tulsa, Okla., have been CAA-approved. The Spartan system retains up-drafting of the air flow but has greatly improved its efficiency, adding a ram air duct for the oil radiator.

REMMERT-WERNER BEGAN OPERATING ON THE TOLEDO (OHIO) MUNICIPAL AIRPORT on April 1, using facilities and personnel of the Toledo Air Associates until the new Toledo Express Airport is completed. Remmert-Werner, with main activities at St. Louis, will operate 24-hr. service at Toledo for all types and sizes of private planes.

CIVIL AIR PATROL PILOTS AND OBSERVERS FLEW 12,290 HOURS on 96 search and rescue missions during 1953, an increase of 30 per cent of similar flying in 1952. This amounted to 60 per cent of total hours flown by all agencies participating in the missions.

LIST PRICES FOR THE AIR TRACTOR AGRICULTURAL BIPLANE developed by Central Aircraft at Yakima, Wash., are $14,975 complete as duster or sprayer with majored engine and prop; $12,475 less engine, prop and mount, and $11,780 less engine, prop, mount and dust chute or spray booms but including hopper and cockpit controls.

THE THIRD ANNUAL TEXAS AGRICULTURAL AVIATION CONFERENCE at Texas A. & M. College last month drew record attendance and included a short course on pest control.

REGULARLY SCHEDULED EXECUTIVE FLIGHTS are being operated by International Business Machines Corp., between its plants with a new 7-place Aero Commander. Twice weekly it will make two round trips between Poughkeepsie and Endicott and between Poughkeepsie and Bos-

(Continued on page 8)

FLIGHT MAGAZINE

Including SOUTHERN FLIGHT and MODERN AIRPORTS

APRIL, 1954 VOL. 41, No. 4

COVER: A flight view of the new Taylorcraft work plane offered in cargo and agricultural versions at $8,950. Powered by a 225-hp. Continental engine with constant-speed, controllable-pitch Hartzell propeller, it weighs 1,510 lbs. empty and has a 1,505-lb. useful load.

—(Taylorcraft Photo by Levy-Shipp.)

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GEORGE E. HADDAWAY, Editor-Publisher: TOM ASHLEY, Managing Editor: FRED N. STONES, JR., Business Manager, P. O. Box 750 (1901 McKinney Ave.), Dallas, Texas—Telephone STerling 2125.

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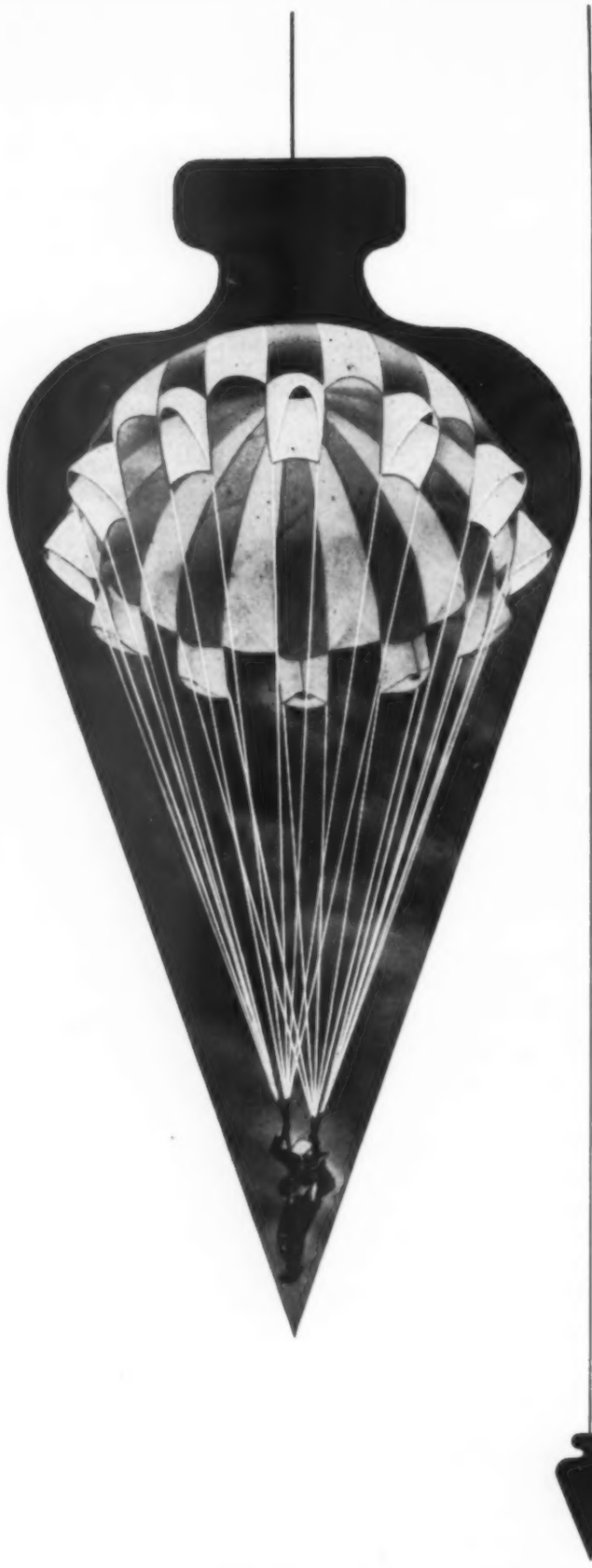

The
Pioneer P-7B* P-9B*
guide surface
personnel parachute
descends with

minimum oscillation!

The Pioneer P7-B, P9-B Guide Surface Personnel Parachute is recognized by the aviation industry throughout the world as a great advancement in parachute design and is now definitely proven as the most efficient life-saving parachute used by jet plane pilots.

Less opening shock . . . *Less* oscillation . . . *Less* side drift . . . Jumper descends virtually *straight down* landing on his feet.

PARACHUTES MAKE THE DIFFERENCE!

*Patents applied for in U.S. and principal countries throughout the world.

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For Your Airplane Engine
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FINAL EXAMINATION

SENT BACK TO DUTY

CAPABLE, DEPENDABLE, RELIABLE

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AIRCRAFT ENGINE OVERHAUL

Dallas Airmotive Inc.
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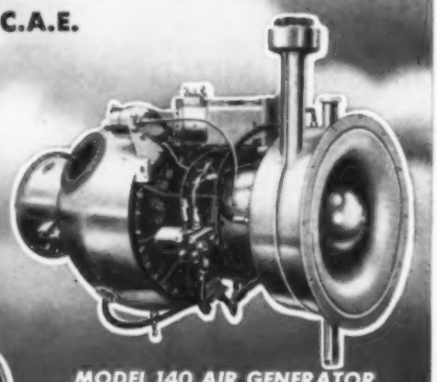
6114 Forest Park, Dallas
RELIABLE ENGINES

CAA APPROVED REPAIR STATION NO. 3822—CLASS TWO POWER PLANT RATING

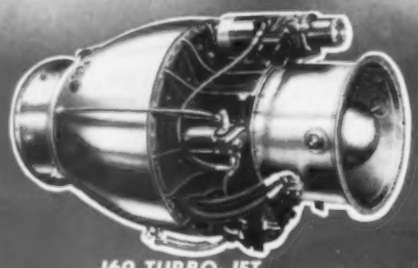
Jet power FOR THE AIR AGE

These Continental gas turbines, now in production at C.A.E., are finding acceptance in a steadily-widening range of applications where shaft turbines, air generators or turbo-jets are required. Manufacturers with present or prospective need for units of exceptional dependability are invited to bring their problems to C.A.E.



MODEL 140 AIR GENERATOR

Supplies up to 2000 cu. ft. per min., at 50 p.s.i. In production, for use as starter for large turbines; numerous other uses in prospect.



J69 TURBO-JET

Jet power for target and trainer aircraft, and auxiliary power for transports and bombers. Develops up to 1,000 lbs. thrust; still higher output in prospect.

ENGINEERS AND OTHERS DESIRING CAREERS IN THE FIELD OF SMALL TURBINES: WRITE TO C.A.E., STATING BACKGROUND AND TYPE OF WORK DESIRED.

CONTINENTAL AVIATION & ENGINEERING CORPORATION

1500 ALGONQUIN AVE., DETROIT 15, MICHIGAN

SUBSIDIARY OF CONTINENTAL MOTORS CORPORATION

AIR REPORT

(Continued from page 5)

ton. On week days it will make non-scheduled trips between Boston, New York, Dayton, Washington and other cities. Should traffic warrant it, additional planes will be added.

MONTANA OPERATORS AND AERIAL APPLICATORS held their first annual meeting and spray school recently at Bozeman. Officers include Robert Monroe, Lynch Flying Service, president; Tom Herrod, Geraldine applicator, vice president, and A. Scott Woods, Morrison Flying Service of Helena, treasurer. C. A. Parker, NATA executive director, attended.

FIRST FLIGHTS HAVE BEEN MADE BY THE OHIO PROJECT AGRICULTURAL AIRPLANE and it is now equipped with dispensing devices for CAA approval. The airplane was built from a Piper J-3 fuselage with the cooperation of many agencies, companies and individuals.

A FLEET OF 10 BELL MODEL 47G HELICOPTERS has been ordered by the republic of Colombia and will be used by President Gustavo Rojas Pinilla, himself a helicopter pilot, in an ambitious plan to rid the republic of malaria, yellow fever and other diseases. The fleet will spray chemicals to kill mosquitoes throughout the nation. . . . **NATIONAL GUARD UNITS IN 24 STATES ARE BEING EQUIPPED WITH HELICOPTERS,** 14 Bell H-13G military models having

Airmen's Calendar

April 12-14—Airport Operators Council 7th Annual Meeting, Tampa, Fla.

April 12-15—SAE Aeronautic Meeting, Production Meeting and Display, Statler Hotel, New York.

April 21-24—2nd Annual Student Paper Competition, Sponsored by Texas Section, Institute of Aeronautical Sciences, Adolphus Hotel, Dallas, Texas.

April 22—Joint Meeting, Radio Technical Commission for Aeronautics, Franklin Institute and Institute of Radio Engineers, Philadelphia, Pa.

April 24-25—Texas Flying Farmer Convention, Galveston.

April 25—Dedication of new airport at Abilene, Texas, with breakfast for 500 Private Fliers.

May 5-7—Third International Aviation Trade Show, 71st Regiment Armory, New York.

May 7-9—Bandera Stompede, Reservations made with Flying L Ranch, Bandera, Texas.

May 16-19—American Association of Airport Executives Convention, Louisville, Ky.

May 20—WNAA Skylady Derby, Raton, N. M., to Kansas City.

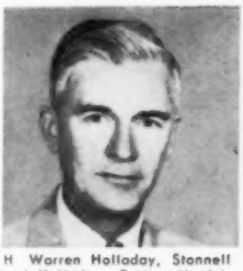
May 29-31—Missouri Air Tour, from Columbia.

June 5—Second Annual Transcontinental Air Cruise, Philadelphia to Palm Springs, sponsored by Philadelphia Junior Chamber of Commerce.

IN DENVER IT'S VEST AIRCRAFT

Don Vest, Vest Aircraft & Finance Co., P. O. Box 5306, Sky Ranch Airport, Denver, Colorado.

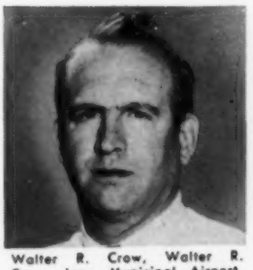
Robert F. Wood, Newport Air Park, Newport, Rhode Island.



H Warren Holladay, Stonnell and Holladay, Easton Municipal Airport, Easton, Md

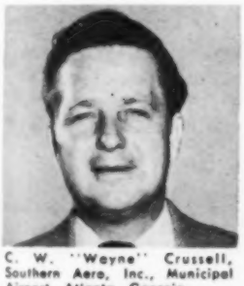
Don Pennington, Carolina Aero Company, Municipal Airport, Asheville, North Carolina

George Harte, Harte Flying Service Inc., Chanute Municipal Airport, Chanute, Kan.



Walter R. Crow, Walter R. Crow, Inc., Municipal Airport, Toledo, Ohio.

B. G. Vandre, Van's Air Service, Municipal Airport, St Cloud, Minnesota.



C. W. "Wayne" Crussell, Southern Aero, Inc., Municipal Airport, Atlanta, Georgia.

Cheston M. "Chet" Newhall, The Babb Co. (Canada) Ltd., Montreal Airport, Dorval, P.Q.

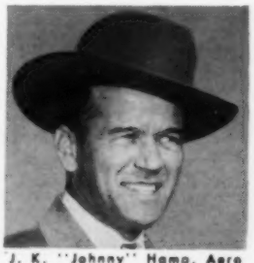
Art Maurer, Arthur Maurer Co., Inc., LaGuardia Field, New York, N. Y.

O. B. Callan, Sales Manager National Aero Sales Corp., Midway Airport, Chicago, Ill.

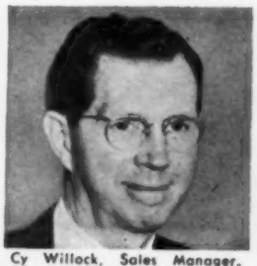
Don Hood, President, Air Sales & Service, Inc. Weir Cook Municipal Airport, Indianapolis, Indiana.

Peter Graves, Southern Ohio Aviation Company, Inc., Dayton Municipal Airport, Vandalia, Ohio.

T. E. "Ted" Byron, Aero-Ways, Inc., Municipal Airport, Cleveland, Ohio.



J. K. "Johnny" Hamp, Aero Sales Division, Houston Transportation Co., Municipal Airport, Houston, Texas.



Cy Willock, Sales Manager, Downtown Air-Park, Inc., 1800 South Western, Oklahoma City, Oklahoma.

H. Leibee Wheeler, Buffalo Aeronautical Corporation, Buffalo Municipal Airport, Buffalo, New York.

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AERO DESIGN AND ENGINEERING COMPANY

TULAKES AIRPORT • OKLAHOMA CITY, OKLAHOMA

already been delivered with about 26 more to follow them. . . . **A BELL MODEL 47G** has been delivered to Mexico City for the Mexican secretary of communications and public works. Victor de la Lama and F. J. (Pancho) Waltz, Bell sales dealers, arranged the sale.

A NEW AUTOMATIC PILOT FOR HELICOPTERS is now standard equipment on all tandem-rotor Bell HSL anti-submarine helicopters going to the Navy. Designed by Bell, the autopilot provides automatic stabilization with pin point accuracy for long periods of time, this being required in operating sonar equipment in anti-submarine warfare.

A REUNION OF AVIATION RADIO OLD TIMERS will be held April 22-23 during the RTCA meeting in Philadelphia, according to F. C. (Mac) McMullen, Western Electric Company's supervisor of government communications sales. Mac says it has been 25 years since plane-to-ground radio began commercially and he has sent personal letters to some 100 of his old acquaintances suggesting the reunion. "There are many other people still in aviation who have been connected with the aviation communication end of the business for 15 to 25 years," he said. "We want all of them to be with us as it would be a lot of fun to get together again as a group while we can still walk about." Those who may want to contact Mac should write him at Western Electric Co., 195 Broadway, New York 7, N. Y.

NEW IN THE AIR: Lear, Inc., has a **NEW VHF BROAD BAND COMMUNICATIONS ANTENNA** suitable for lightplanes and transports. . . . Field evaluation of a **NEW OIL ADDITIVE CALLED "SPOTOIL"** includes an experiment now being made on one engine of a Slick Airways C-46. The additive is said to offer better lubrication, reduced pour pint and increased viscosity index and increase in film strength. . . . **A NEW GENERAL ELECTRIC FIRE CONTROL SYSTEM FOR SUPERSONIC COMBAT PLANES** is said to be capable of looking onto an invading aircraft, automatically guiding the interceptor to the correct firing point, firing the guns and automatically guiding the interceptor out of danger after the mission is completed. . . . Sperry Gyroscope Co. is developing **3-D STEREO RADAR SYSTEMS,** among which airport surveillance radar would be greatly improved. . . . Hardman Tool and Engineering Co. of Los Angeles is developing **NEW LUXURY SEATING FOR MODEL 18 TWIN BEECHCRAFTS** and for the Lodestar conversions being readied by Lear. . . . **INSTALLMENT BUYING OF TRAVEL ON PAN AMERICAN WORLD AIRWAYS** world-wide routes has been proposed. Passengers could pay 10 per cent down with 20 monthly payments covering the balance.

Boeing is completing its **FIRST JET TRANSPORT,** a 190,000-lb. prototype carrying 80 to 150 passengers at 550 mph. or more. It features pod engines. . . . **INTERCONTINENTAL MANUFACTURING CO.** of Garland, Tex., has purchased the assets of Brady Aviation Corp., at Brady, Tex., for the overhaul and modification of airplanes. . . . **FIRST TURBO-PROP VERSION OF THE CONVAIR 340** is being completed at Convair's Fort Worth factory, where two 3,250-hp. Allison YT-56-A3 engines are being installed in a YC-131C military version of the 340.

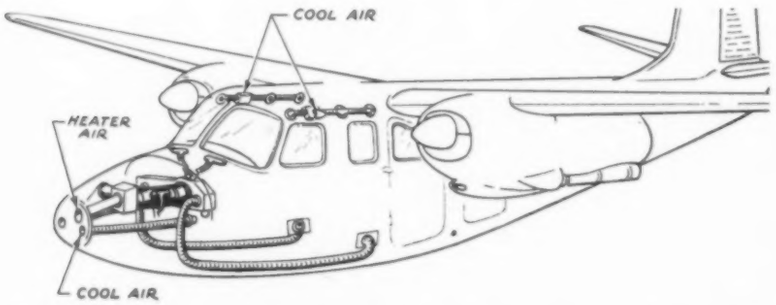
TEMCO AIRCRAFT CORP. at Dallas has announced two important new contracts. One is for tooling and production of major fuselage components for the Boeing B-52. The other is for fuel tank sealing on thirty USAF C-54 transports.

SCINTILLA DIVISION OF BENDIX AVIATION has established a manufacturing sales office in Dallas at 8401 Cedar Springs Road, in charge of Frank W. Johnson ,district sales engineer. He will handle manufacturers' requirements for Scintilla products in the Southwest.

NYLON FUEL CELLS FOR LOCKHEED LODESTARS have been installed with CAA approval in a project at AiResearch Aviation Service Co., Los Angeles International Airport, in which AiResearch did the engineering, tooling and installations while Goodyear fabricated the bags. First installation was in two Goodyear Lodestars and a third will be in a Mississippi River Fuel Corporation Lodestar. Jack O'Brien, AiResearch Service manager, said the bags increase fuel capacity from 638 useable gallons to 820 useable gallons, extending range about 500 miles. There is no appreciable weight increase, as the largest of the bags weighs only 6.5 lbs. They eliminate the need for periodic re-sealing of the airplane's integral fuel tanks.

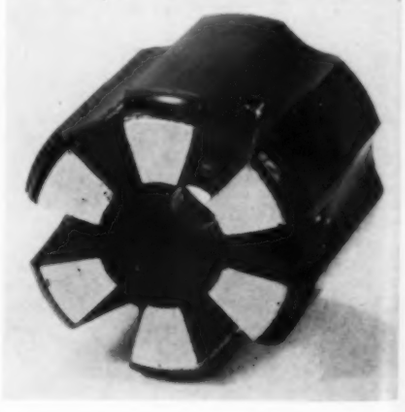
SENATOR PAT McCARRAN, sponsor of a new civil areonautics act, is expected to seek permanent certification of local service carriers. . . . **MOONEY AIRCRAFT MAY RESUME PRODUCTION** in April with a Texas group formed to buy the majority interest held by the late Charles G. Yankey. Al and Art Mooney, W. L. McMahon and Bill Taylor will remain in charge. The firm has orders for $2,000,000 of its single-seater M-18 and 4-place M-20 models. . . . **FIRST FLIGHT OF LARRY FARNHAM'S FLY-CYCLE,** described in last month's issue of this magazine, was made in March at Ft. Collins, Colorado.

AIRCRAFT AND HELICOPTER DEMONSTRATIONS are invited by the Gulf States Section of the Society of American Foresters for its annual meeting May 6-7 at Alexandria, La. This meeting will be devoted to the display and demonstration of equipment used by foresters and will draw some 350 foresters among whom will be represented about 25 companies and agencies which own or use aircraft in forest fire detection and transportation. Currey Sanders, Beechcraft distributor at Shreveport, is a member of the Society, and made the announcement. He will demonstrate a Beech Bonanza at the meeting. ★★★



NEW HEATING AND VENTILATING SYSTEM for the Aero Commander provides for nose-installation of a Janitrol combustion heater in the nose instead of aft of the baggage compartment as formerly, and a new fresh-air system with scoops above pilot and co-pilot windows. Outlets for heat and air are individually controlled.

A low cost magnetic filtering element (below) installed in aircraft fuel systems to remove metal particles from gasoline has been developed by the Fluid Control Company of Midland, Texas. I. E. Hale, company executive, said the price will run from $4.50 to $15 depending on where the element is placed in the fuel system.



BUSINESS IS SKY HIGH...

CESSNA 310

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Sure sign of the times today is the new corps of American flyers—the businessmen who pilot their own or company planes. They are going places—with speed, comfort and schedule-free convenience.

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PERFORMANCE!

From over her trusty magnifying glass, our shapely Sherlockess Holmes reports: "Elementary, my dear Watson! The perfection of this Wasp Junior proves beyond a doubt it could have been overhauled only by Southwest Airmotive!"

Equally-elementary: SAC's industry-beating flat labor rates (engine, harness, carburetor, magnetos)—

P. & W. R-2000	$1510.00
P. & W. R-1830	1250.00
Wright 1820	1100.00
P. & W. R-1340	659.50
P. & W. R-985	557.00
Jacobs 755-A2	500.00
Lycoming 260 hp	400.00
Cont. E-185 or 205	400.00

Note to Dr. Watson, WHEREVER you are:

Rosemary Payne is 22, 118 lbs., 5'7", with brown hair and eyes.

Southwest Airmotive COMPANY
LOVE FIELD DALLAS

Just among ourselves

EDITORIALS

A BETTER WAY

THE advertising and sales promotion campaigns launched from time to time by the Air Force and the Navy to attract flying cadet material would be far more palatable if these two services paid more attention to grass roots aviation as a source of supply and at least investigated the possibility of flight indoctrination courses at the high school and college level. We've always felt that the military services could save a lot of tax money, and what's more important, get a better product with a share-the-cost, selective system of flight indoctrination of American youth.

Trouble is, you can't get the military services to admit that those of us who keep pounding for flight indoctrination of American kids might have something. Then, too, there's always a vociferous group on the sidelines who are scandalized at the thought of "subsidy" or "nationalization" of flight training. Like the military, they're the same people whose memories are so short they have forgotten how the old CPT and WTS programs saved our necks when the bell rang in 1941.

The Director General of the International Air Transport Association, Sir William P. Hildred, recently told the Royal Canadian Flying Clubs Association that pilots trained in the flying clubs of Canada and the United Kingdom may well have been responsible for the survival of our civilization by holding the aerial line above the English Channel during the Battle of Britain. This statement is reminiscent of those we heard from very high places lauding our own civilian air training operations during World War II. Sir William praised Canada's system of producing young pilots through cooperation between the government and Canadian flying clubs and schools and added that other countries would do well to follow the example of Canada, remembering that Russia, with its tremendous Peoples Civil Flying Organization, has gone all-out in producing thousands upon thousands of lightplane pilots as an immense reserve of semi-qualified manpower.

Sir William put his finger on the crux of the matter when he said: "The more men we can breed who will do things for themselves, with their own minds and hearts and hands, the better; and the type who gets what he calls fun by watching life at one remove, or listening to life at a distance, or watching other people do things, is a type we don't particularly want."

His statement recalls to mind a statement made in this magazine back in 1948 by Rear Admiral Luis de Florez, who said: "If this nation is to lead the world in the air in the coming generations, it must breed airmen, and the best way to breed airmen is to bring up our children to be just as familiar with aircraft as they are today with automobiles. They should be taught certain rudiments of flight, and opportunity should be provided through common civil flying to learn how to fly and to use personal flying as transportation."

It might be a good idea for someone to tote up what the military services are spending in high wash-out rates and in trying to recruit volunteers and then figure out how far this would go in flight indoctrination of select American kids during the time their parents pay the board and room bills.

(Continued on page 30)

SUPERSONIC AIR POWER VS THE CHARACTER OF MAN

EDITOR'S NOTE: Charles A. Lindbergh delivered a significant address recently at the Honors Night Dinner of the Institute of the Aeronautical Sciences. The occasion was the presentation to Lindbergh of the coveted Daniel Guggenheim Medal for his pioneering in flight and air navigation. In his address, Lindbergh spoke as if asking himself, "What has aviation brought to mankind?" True, he said, it has accomplished much — together with other branches of modern science, aviation has been so successful that it has revolutionized the environment of man. But in the enthusiasm of bringing about this change, we have been blinded to natural laws which govern the conduct of men. At the end of the first fifty years of engine-driven flight, we are confronted with the stark fact that the historical significance of aircraft has been primarily military and destructive, Lindbergh declared. Where will it lead — what can be expected? The Lindbergh discussion deserves widest possible consideration, especially that part which follows in full:

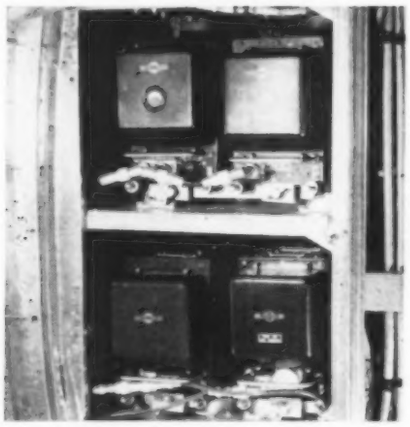
MAN has always had a tendency to complicate his life with technical knowledge and material devices. Since the mechanistic age began, we have allowed ourselves to become increasingly bound to a regime required by its training and encouraged by its products. Our population has shifted from farm to factory in order to better tend machines, administer commerce, and gain the conveniences of city life. This tendency, originally fostered by intellectual curiosity and economic reward, is now accelerated by military necessity and our instinct for survival. In a competitive world, life and freedom must be backed by strength.

But survival has a time dimension which says that power consists of more than strength of arms. Short-term survival may depend on the knowledge of nuclear physicists and the performance of supersonic aircraft, but long-term survival depends alone on the character of man. Our scientific, economic, and military accomplishments are rooted in the human quality which produces them. In the last analysis, all of our knowledge, all of our action, all of our progress, succeeds or fails according to its effect on the human body, mind, and spirit. While we concentrate our attention on the tools of economics and war, we must not neglect the basic means of surviving, the basic reason for survival, man himself.

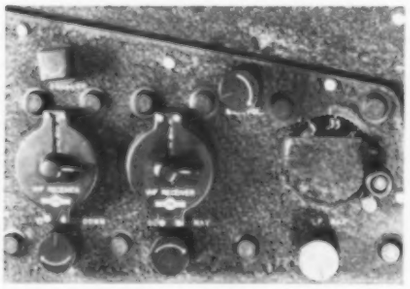
What will this modern environment of ours create in the future character of man? Here, rather than in the atom, is the power which will establish our wisdom and decide our fate. And here we pass beyond clear-cut scientific frontiers. Our clocks, weights, measures, and mathematics become inadequate when we discuss the basic qualities of man. We can mark down

(Continued on page 47)

COLLINS flies with the A



This radio rack in the Aero-Commander shows part of the Collins installation. Top shelf, left to right, holds a Collins 17L-3 VHF Transmitter and 51U Communications Receiver. Bottom shelf holds a Collins 51R-3 Navigation Receiver and 51V Glide Slope Receiver. In addition, this Aero-Commander has a Collins 51Z-1 Marker Beacon Receiver, 18S-4 HF Transmitter-Receiver, 180K-3 Antenna Matching Network, and the Collins Integrated Flight System.



Automatic, finger-tip controls for Collins VHF, HF communication and Collins navigation equipment are conveniently located overhead in Mr. George T. Pew's Aero-Commander. Cockpit and equipment rack design leaves plenty of room for dual VHF Omni and ILS installation.

A section of the Aero-Commander Instrument Panel shows Collins FD-102 Integrated Flight System instruments. The Approach Horizon, top left, and Course Indicator, below left, simplify instrumentation by removal of four conventional instruments, enabling the pilot to make safer ILS approaches.

Aero Commanders

Mr. George T. Pew, Chairman of the Board, Aero Design and Engineering Company, equips his Aero-Commander with complete Collins VHF, Omni, ILS and the Integrated Flight System.

The Aero-Commander is one of the most popular executive and private aircraft in use today. Twin 260 HP engines give it a cruising speed of 197 mph and a high speed of 211 mph. Visibility over the nose is unequalled. Landing lights are in the nose for utmost effectiveness and minimum blinding. The three wheels retract swiftly and simultaneously at the flip of a switch. The Aero-Commander seats 5-7 people and has a 32 cu. ft. luggage compartment. Due to its high useful load, the Aero-Commander is ideally suited for Collins airline type communication and navigation equipment. This adds to its utility as an instrument airplane.

No wonder it stands so high with American businessmen. As a pilot *and* engineer, Mr. Pew knows which equipment will give him the most accurate, reliable performance. That's why he installed Collins.

For complete information on Collins communication and navigation equipment, contact the Collins office nearest you. You will receive their prompt attention.

Aero Design and Engineering Company, Bethany, Oklahoma, will factory install Collins equipment when you purchase your Aero Commander. Ask them, or see your nearest Collins authorized aviation dealer.

FIRST in service to the aviation industry . . .

COLLINS RADIO COMPANY
Cedar Rapids, Iowa

11 W. 42nd Street, NEW YORK 36
1930 Hi-Line Drive, DALLAS 2
2700 W. Olive Avenue, BURBANK

COLLINS

ALAMO *for quality control*

and personalized CUSTOMER SERVICE....

from START

to FINISH

New customers daily are finding the quality control and personalized service procedures of Alamo Aviation have established a new standard of achievement in aircraft service, maintenance and overhaul. Here the customer receives the kind of personal attention that makes his job a **specialized service.**

From the original workorder to the final entries in the log book, all work at Alamo Aviation is performed to the exacting standards of an *uncompromising quality control program.* This program assures the highest work specifications through factory trained personnel supervised by a competent and experienced engineering staff. The products and parts we use are subjected to rigid testing and examination prior to installation to assure proper functioning and operation. This program all adds up to better service, maintenance and overhauls for less money in less time.

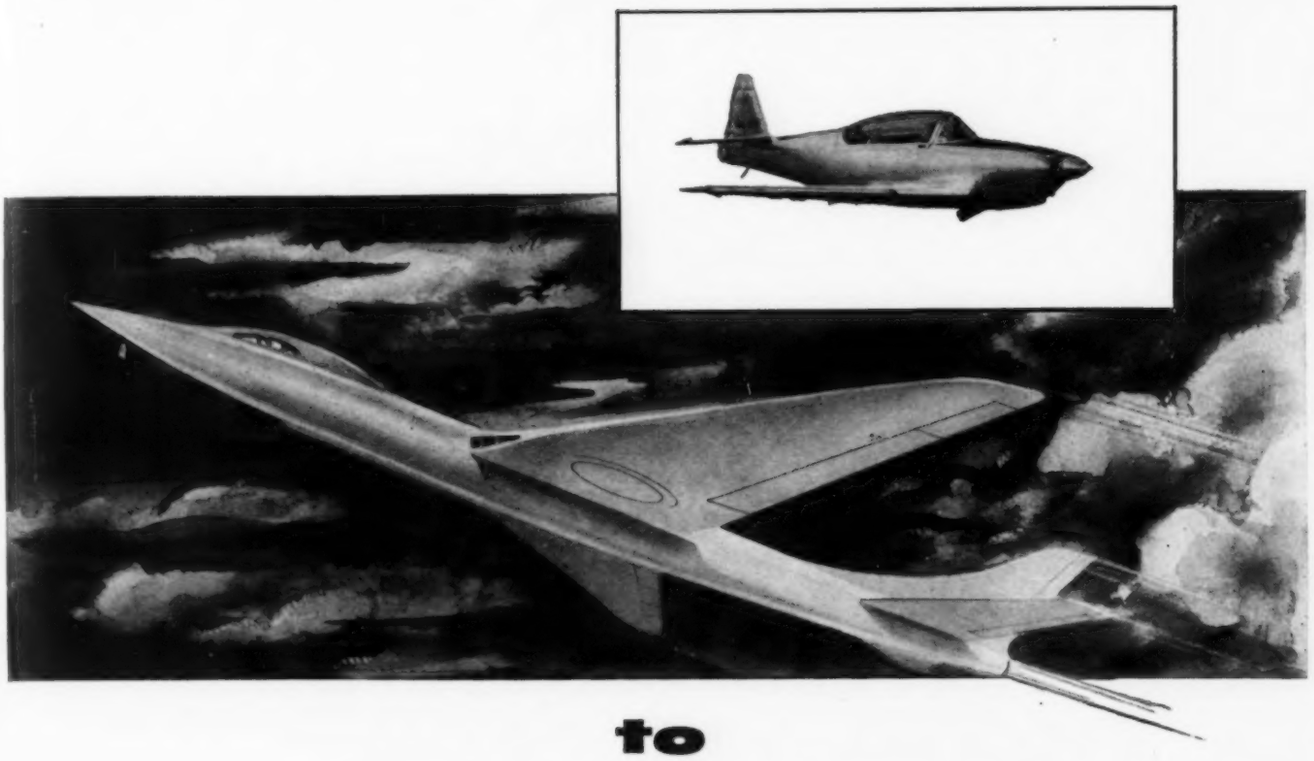
Next time you are in need of service — specialized service — let ALAMO AVIATION handle your aircraft needs. You will find our modern, well equipped shop always ready to serve you with our kind of personalized quality service.

ALAMO AVIATION, INC.

Municipal Airport **San Antonio, Texas**

BEECHCRAFT DISTRIBUTOR

from trainer



to supersonic fighter

With an integrated management, engineering and production staff, TEMCO is contributing materially to every phase of military aircraft manufacture — from trainer to supersonic fighters, including its own designs.

This is a continuing program whereby TEMCO, in a modern, well equipped aircraft production facility, is putting its experience behind the designing and building of the world's most potent air force — on schedule, at lowest possible cost.

TEMCO®
AIRCRAFT CORPORATION
DALLAS, TEXAS

Plants at: DALLAS • GARLAND • GREENVILLE

New Allison "retrofit" kit boosts Allison-powered Northrop F-89 ceiling substantially—costs fraction of new-engine price — can be field-installed by Air Force men.

Rocket firing jets reach new heights

Air Force and Allison engineers have put their heads together to save the taxpayers' money and get higher-altitude performance from veteran Northrop F-89 Scorpions. They developed a field modification kit which gives the earlier Allison J35 models the performance of the latest production model engines and boosts the Scorpion's ceiling substantially—at only a fraction of the cost of a new engine.

These "retrofit" kits can be installed by Air Force Maintenance Crews on a minor repair basis *right in the field*. Already well started, the modification program will cover several hundred Scorpions assigned to the Air Defense Command at bases in the United States, and to the Alaskan and Northeast Air Commands guarding transpolar routes to America's heartland.

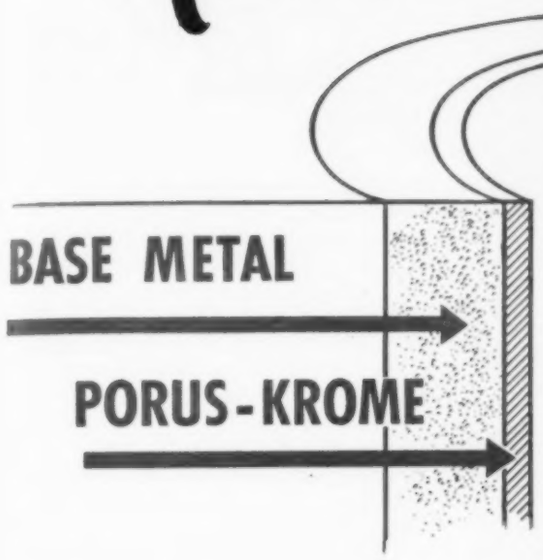
This is another good example of Air Force-Allison cooperation to give America the most airpower per dollar. This teamwork started in World War I and, continuing today, is an important factor in maintaining America's superiority in the air.

GM GENERAL MOTORS

Allison DIVISION OF GENERAL MOTORS, INDIANAPOLIS, INDIANA

World's most experienced designer and builder of aircraft turbine engines — *J35 and J71 Axial, J33 Centrifugal Turbo-Jet Engines, T38 and T40 Turbo-Prop Engines*

Reverse the Wear...



VAN DER HORST TRADE MARK

* *PORUS-KROME is a dense, hard, wear and corrosion-resistant chromium, produced by the Van der Horst Corporation of America, and which gives working surfaces an infinite number of tiny oil-retaining reservoirs for perfected lubrication.*

U. S. PATENTS
2,048,578, 2,314,604 and 2,412,698

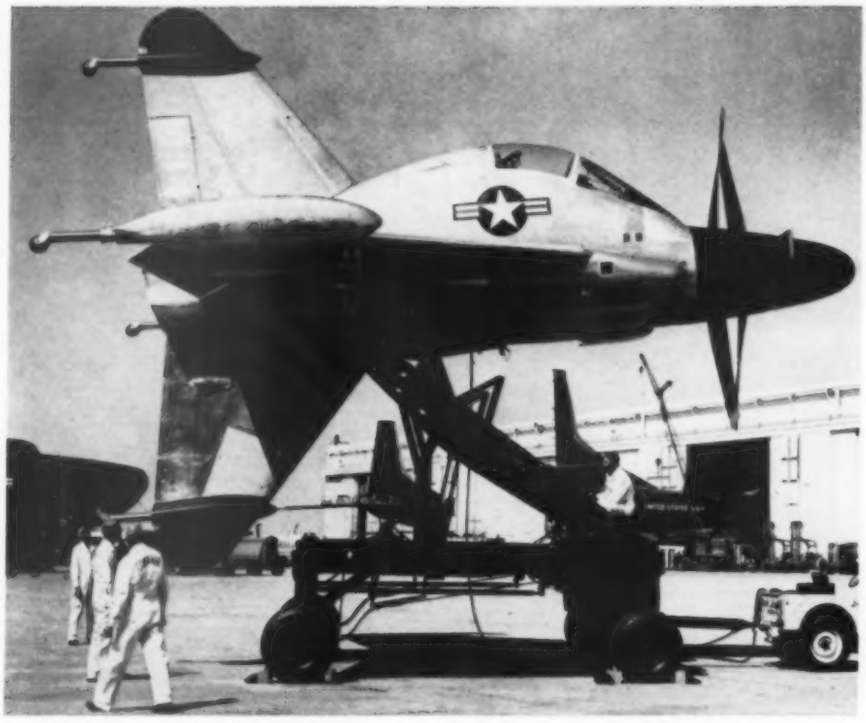
The effects of wear on expensive, machined parts — such as aircraft cylinders — can be reversed. By Van der Horst processing, even badly worn cylinders recover their original dimensions. Then, instead of wearing out again in the usual time, they last at least twice as long.

We use channel type PORUS-KROME* to accomplish this reversal. It has been proved and accepted by the armed services, and by air carriers. One of the latter finds the entire cost of each renewal is paid for by reduced lube oil consumption. This special chromium steps up engine efficiency!

Besides that, and a much better resistance to airborne abrasives, the costs of overhaul and spare parts are cut to a minimum. Even the rusting of cylinders — always a major menace of "low time" aircraft engine life — is counteracted by chromium.

One manufacturer now specifies PORUS-KROME cylinders as standard in all *new* engines —to make them *stay* new! For equal advantage, have Van der Horst "reverse the wear". W52-3A

TERRELL, TEXAS—VAN DER HORST CORP.—OLEAN, N. Y.



First pictures of the Navy's radical new Convair XFY-1 vertical fighter are shown on this page. It is seen above as it will appear in level flight, below as it is being elevated by special rig to vertical position, and as it will appear ready for vertical take-off at lower right. Twin jet engines of undisclosed power drive contra-rotating propellers. Landing gear consists of simple casters on vertical fin surfaces and on tips of delta wing.

—(Convair Photos.)

Vertical Take-Off Fighters

AN idea born with the advent of jet engines has finally resulted in two experimental U. S. Navy vertical take-off fighters. Jets make it possible for airplanes to develop more pounds of thrust than their gross weight, and this leads to fixed-wing airplanes which can take off or land in a vertical position, using their tails as landing gear. For example, a 10,000-lb. airplane will be weightless on its tail-end landing gear the moment it develops 10,000-lbs. of thrust. As thrust exceeds its weight, it will rise straight up.

The two Navy VTO (for vertical take-off) experimentals which will lead U. S. developments in vertical flying are pictured on these pages. They are the Convair XFY-1 and the Lockheed XFV-1. Both projects have been under wraps for the last three years. Both are powered by twin jet engines driving contra-rotating propellers, Lockheed identifying its turbo prop as an Allison. The Convair is a

Wide "tread" of casters is said to give Convair exceptionally-good "footing" at rest in vertical position.

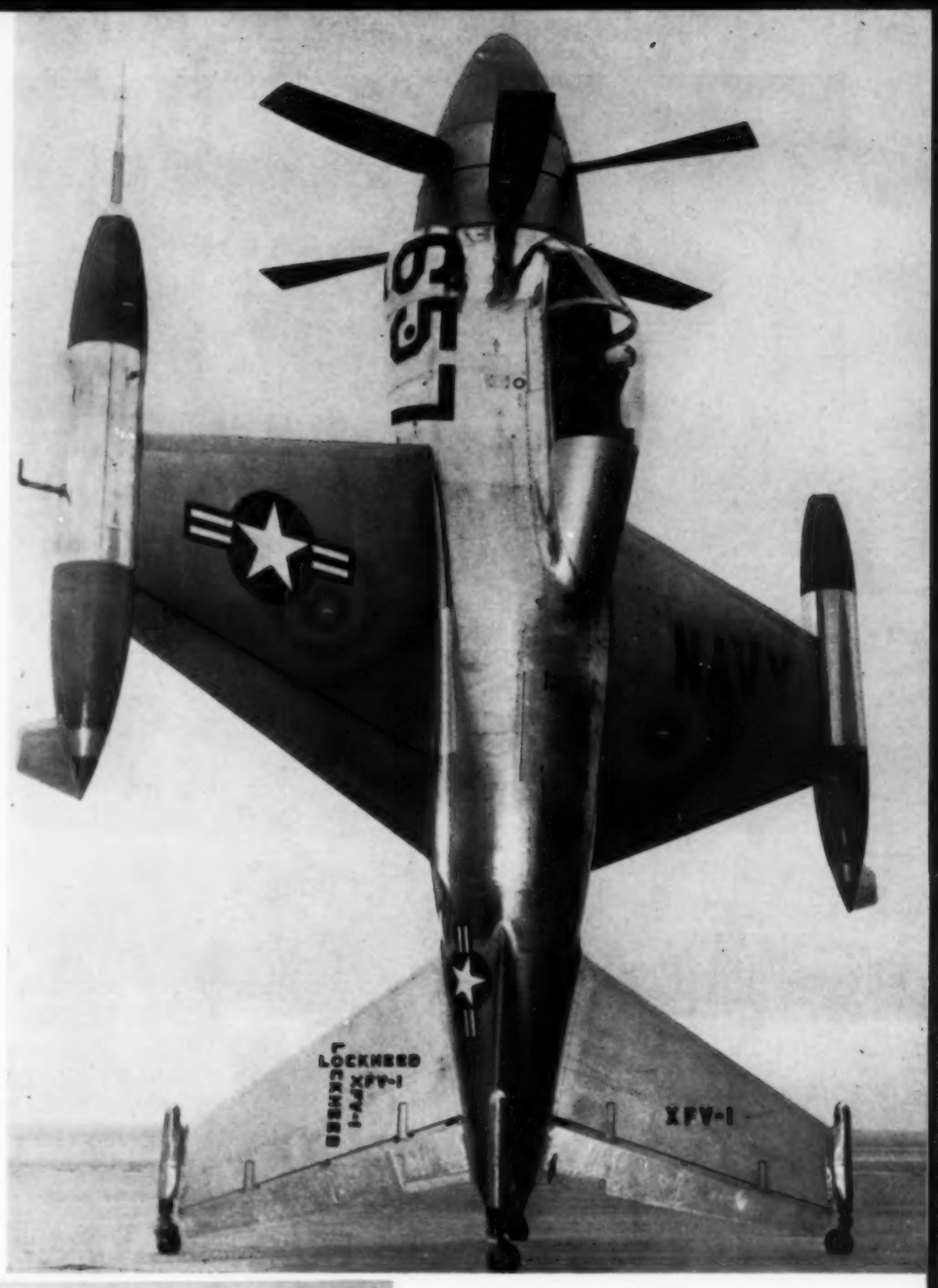
Temporary conventional landing gear is being used for taxi tests of new Lockheed XFV-1.

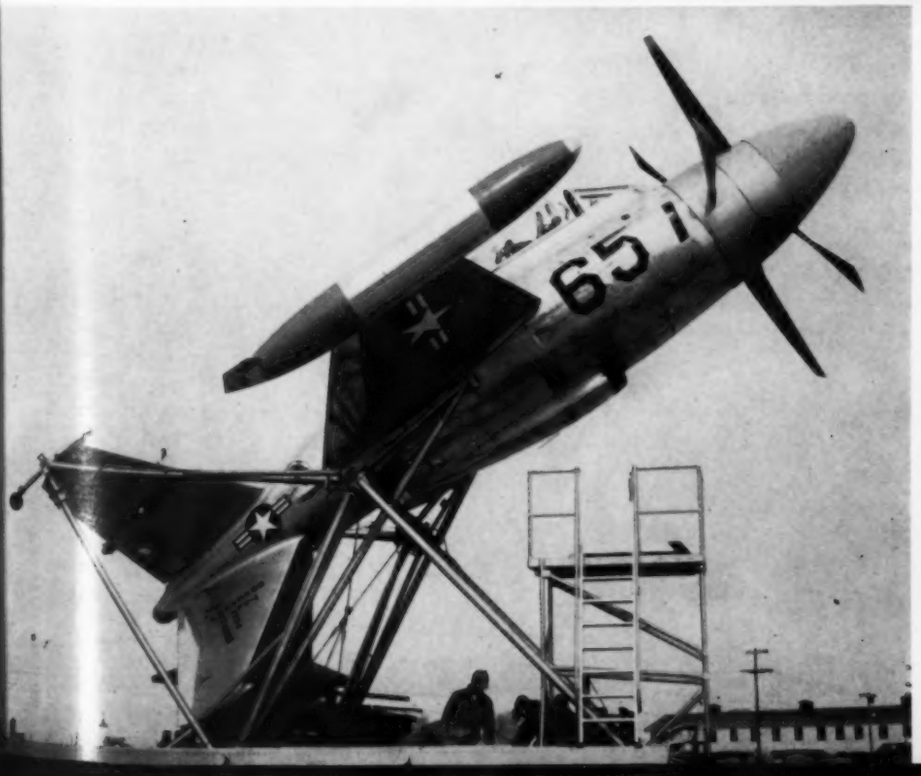
delta-wing design while the Lockheed has a straight wing. No weight, power or performance details have been released on either design. Both are "weeks from vertical take-off and landing," the Navy said in mid-March.

More interesting than their hidden technical details, however, is the new concept of flight which such airplanes will originate. Vertical take-off and landing characteristics have been accomplished in helicopters only at the expense of rotary-wing complications and speed limitations. Vertical take-off and landing capabilities by fixed-wing airplanes make possible many advantages, chief of which is very high speed in level flight as well as zero speed in hovering or take-off and landing.

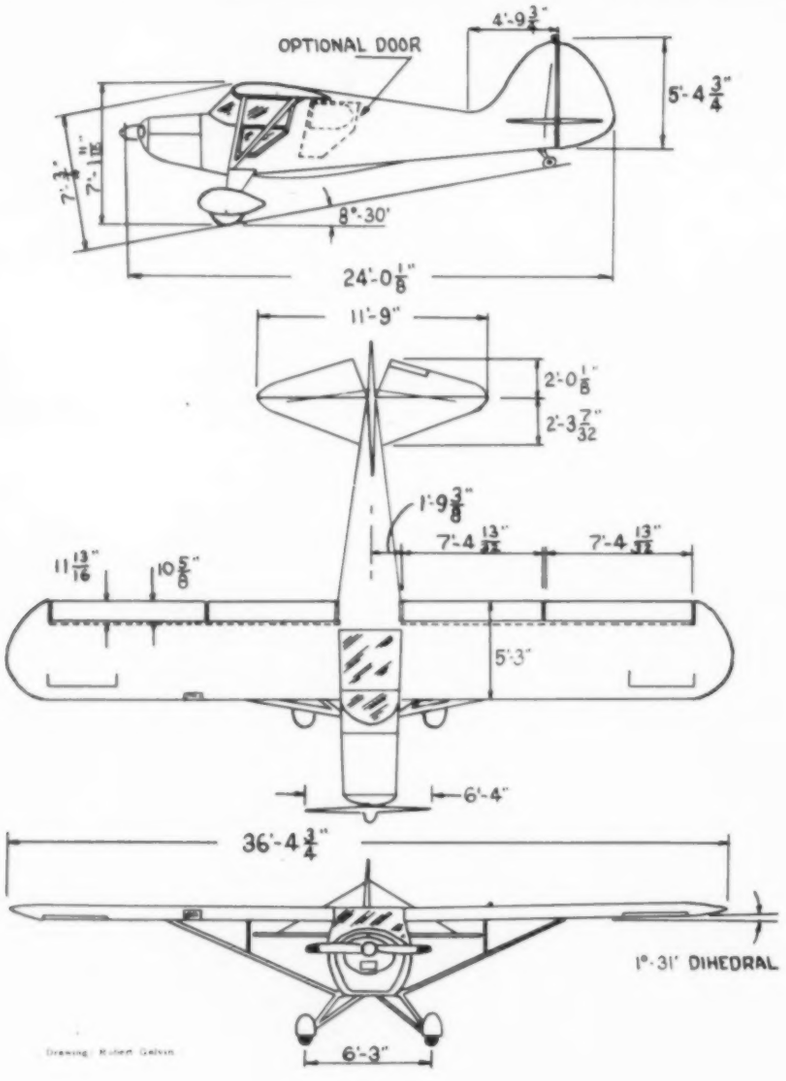
Shooting down a VTO fighter, says J. F. (Skeets) Coleman, the man who

(Continued on page 40)





First pictures of twin-turbo-prop Lockheed XFV-1 for Navy show it in vertical position above, being elevated by special cart below and being mounted by Test Pilot Fish Salmon on ladder at right below. Both Lockheed and Convair use "tilting" pilot seat.
—(Lockheed Photos.)



Taylorcraft's new 225-hp. work plane is offered in "Topper" version for agricultural dusting and spraying and in "Ranch Wagon" version (above) for cargo hauling. It has three doors and a fourth can be specified by customer. Empty weight is 1,510 lbs., useful load is 1,505 lbs., and gross weight is 3,015 lbs. Note wing leading-edge slots.
—(Taylorcraft Photo and Drawing.)

T-Craft For Heavy Loads

TAYLORCRAFT, INC., has developed and is now making deliveries of a new work plane having a 1,500-lb. useful load which is the same as its empty weight. It is offered in two versions, a cargo model and an agricultural model for crop dusting or spraying.

The new airplane is powered by a 225-hp. Continental 6-cylinder flat engine driving a constant-speed, controllable-pitch all-metal Hartzell propeller. Of fabric-covered welded-steel tubular construction, the work plane has a list price of $8,950.

First delivery has gone to Garmac Industrial Investments, Ltd., of New Zealand, which will use it in that country's new aerial cropping process of applying top dressing of fertilized soil to increase crop yields. The second

delivery from the factory, located at Conway-Pittsburgh Airport, Conway, Pennsylvania, was to be made in April to Aero Sales, Municipal Airport, Houston, Texas, Taylorcraft distributor for Texas and Louisiana.

Johnny Hamp, manager of Aero Sales, which is also distributor for the Aero Commander, said the new 225-hp. Taylorcraft should find a ready market among aircraft owners who need a moderately-priced single-engine lightplane capable of handling 1,500-lb. useful loads in and out of small fields.

"This 225-hp. Taylorcraft has demonstrated its capabilities in an interesting series of hops made recently to test length of take-off run versus weight lifting. The tests were conducted at Beaver County Airport, Pennsylvania, with Jack Gilberti as pilot, Robert Galvin and Denver Thompson as observers and Harry M. Jones, CAA inspector, as witness.

"A total of 5 runs gave us a pretty

(Continued on page 39)

Steep climb is shown above by 225-hp. Taylorcraft, which can get off in 875 ft. at gross weight in no wind from sod field. In cabin photo of ag model below, pilot sits in center of front seat. Note placard specifying maximum of 1,258 lbs. for rear compartment.

—(Taylorcraft Photos by Levy-Shipp.)

The Robertson Skylark experimental appears conventional until its huge flaps and leading-edge extension are rolled out. Metal-covered tubular-steel construction is used. Power plant is Continental 260-2X. Speed range of 25-165 mph. is claimed.
—(Robertson Development Corp. Photo.)

High-Performance Experimental

An interesting development at St. Louis features novel high-lift and control devices

A YOUNG St. Louis aeronautical engineer has logged about 30 hours of flight-testing on a 5-place experimental all-metal, high-wing lightplane of his own design for which unusual performance capabilities are claimed. It features novel high-lift and control components and was designed to be an executive and industrial airplane for slow-speed flight from very small areas only slightly larger than operating areas required by helicopters.

Known as the "Skylark SRX-1," the prototype has a 1,250-lb. useful load at a gross weight of 3,500 lbs. and is powered by a special Continental GE 260-2X geared engine of 240 hp. or more driving a constant-speed, controllable-pitch Hartzell propeller. The designer, 27-year old James L. Robertson, says performance already achieved at gross weight and in zero wind includes take-off and landing within less than 120 ft., 350-ft. take-off distance over a 50-ft. obstacle and 25-mph. minimum speed at which level flight was maintained. He places its speed performance at 150 mph. for cruise and 165 mph. for top speed. This would give it a speed range of 6.6 to 1.

Robertson said he designed the Skylark with provisions for installation of a turbo-prop engine of undisclosed design, this having been made available and to be installed in the near future. It is expected to develop approximately 500 hp., and with it the designer hopes to achieve a phenomenal 4,000-lb. useful load at a gross weight of 6,250 lbs. Empty weight of the airplane is now 2,250 lbs. with the 6-cylinder Continental reciprocating engine. Cruising flight speed with the turbo-prop engine would be more than 200 mph., he said. Robertson said he believes his airplane is the first American lightplane specifically designed and built to accommodate a turbo-prop installation.

He described his spin-proof Skylark as follows:

"The unusual performance of the airplane is due to the use of a series of new aerodynamic components. The most important of these are:

"1. Shrouds—a full-span wing leading-edge extension which serves as an aerodynamic balance for the flap, and which also prevents the airplane from stalling.

"2. Robertson Flap—a full-span double-slotted configuration of the Fowler flap. The Skylark has more flap area than many twin-engine commercial airliners. The flap-shroud combination, on which several patents are pending, triples the lift of the basic wing and thus permits the extremely low flight speeds and short landings and take-offs.

"3. Spoilerons—flush plates on top of the wing that operate in tandem to provide lateral control.

"4. Turbulator Control — turbulence-inducing surfaces used to supply positive ground control in high winds and to provide steep glide angles over high obstacles without increasing forward speed.

"5. Stabilator or Flying Tail—an all-moveable horizontal tail surface rotating about a lateral axis determined by its hinge line, used for longitudinal control.

"6. Elevances—these provide aerodynamic balance for all-moving stabilator type elevators.

"7. Spinner Duct Cooling—provides engine cooling at low air speeds."

Pictures of the airplane on these pages illustrate some of these devices.

The young designer heads a firm named Robertson Development Corporation at St. Charles Airport, St. Charles, Missouri, the airport being 10 miles west of Lambert Field near St. Louis. Robertson said he was an aeronautical engineer with Glenn L. Martin Co., and McDonnell Aircraft Corp., before beginning his Skylark developed two years ago. He said he

Short take-off picture shows Skylark's full-span leading-edge shroud and large full-span trailing-edge Fowler-type flaps, with "elevances" projecting forward from horizontal stabilizer. These provide aerodynamic balance for all-moving elevators.

wants to complete his flight-testing before discussing production or marketing plans, adding that he hopes to undertake these this summer.

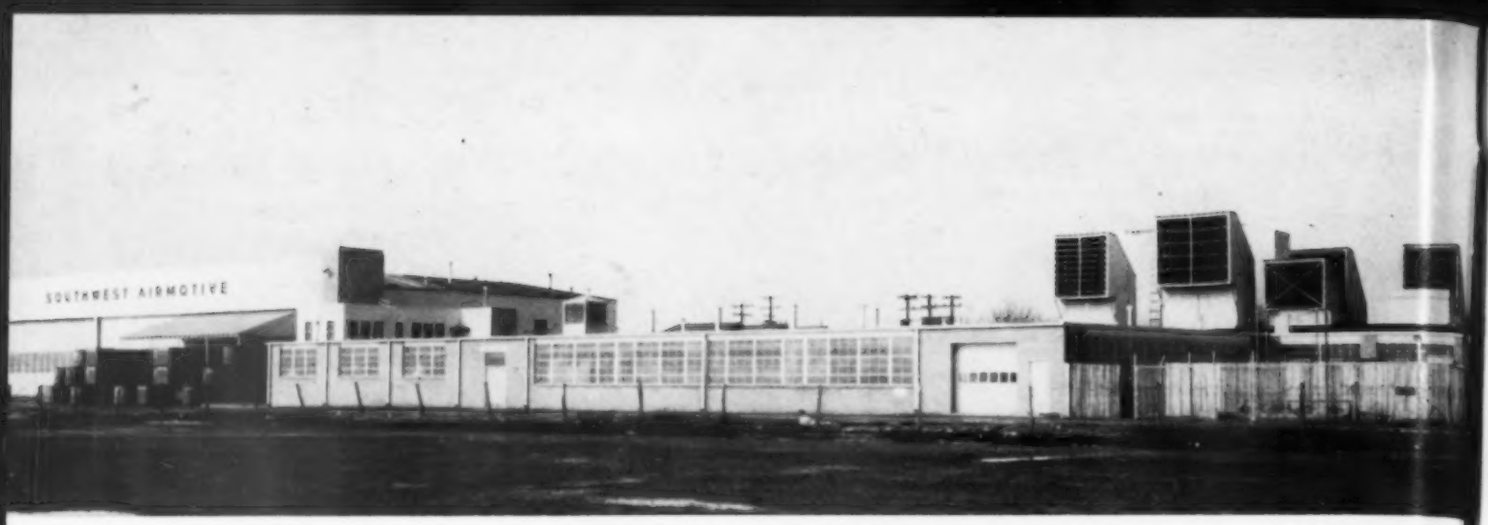
"Planned primarily for the executive and industrial markets, safety and usefulness were the prime operating objectives of the Skylark design," Robertson said. "Stall-proof and spin-proof design, flight speeds of 25 mph., and the ability to make emergency power-off landings in almost any cleared area longer than 100 ft. provide flight safety, while structural safety is obtained with a steel-tube cabin framework, fire-resistant all-metal construction and the use of a design load factor of more than twice that required by the Civil Aeronautics Administration. Usefulness is maximized in that the short operating areas required by the aircraft open up many plantside locations and bases of operation now accessible by air only with a helicopter.

"The production version of the Skylark series will incorporate all the safety and performance features of the prototype along with a somewhat more powerful engine. Current flight test data indicate that the production model will attain cruise speeds in excess of 200 mph. at 10,000 ft. The corporation is planning to initiate production of the airplane as soon as current financing and production arrangements have been completed — probably about June 1. Marketing plans will be announced at the completion of the current flight test program."

Dimensions of the prototype are as follows: Span, 40 ft.; length, 30.5 ft.; height, 7 ft. 10 ins.; tread, 8 ft. 10 ins.; cabin length, 10 ft. 6 ins.; cabin width, 44 ins.; number of seats, 4 to 5.

Weights of the prototype are as follows: Empty, 2,250 lbs.; normal useful load, 1,250 lbs.; normal gross weight, 3,500 lbs.; utility useful load, 4,000 lbs.; utility gross weight, 6,250 lbs. ★ ★ ★

Close-up of Skylark with its novel surfaces extended. Large flap area is said to exceed that of many twin-engine airliners. Lateral control is provided by "spoilerons," which are flush plates on top of wing operating in tandem. Skylark dimensions include cabin length of 10 ft. 6 ins. and 44-in. cabin width. Span is 40 ft., length 30.5 ft., height 7 ft. 10 ins. and tread 8 ft. 10 ins.
—(Robertson Development Corp. Photo.)



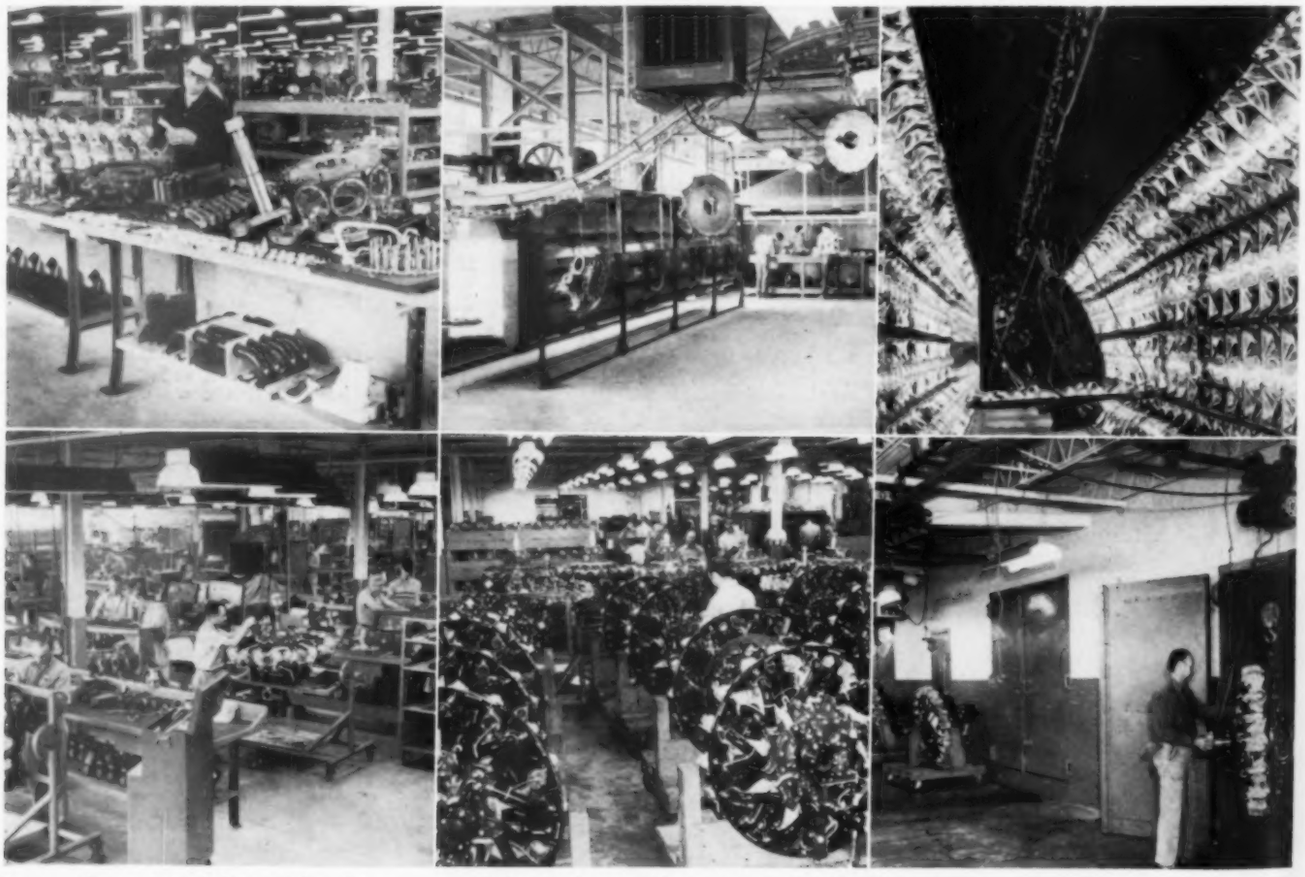
Newest expansion of Southwest Airmotive facilities includes addition which doubled its engine overhaul shop above. This shop has overhauled 8,000 Pratt & Whitney Wasp Juniors.

Bigger Shops for More Flying

WITH business flying expansion continuing to demand improvements in aircraft service, maintenance and overhaul, leading aviation service operators are meeting the challenge with expansion of their facilities and equipment. An example is a recently-completed Southwest Airmotive modernization program at Love Field in Dallas, one of the nation's largest aircraft service operations.

Chief among Southwest's new improvements is an addition to its engine shop, which has been doubled in size during the last year. The firm overhauled 2,105 aircraft engines last year, most of them 450-hp. Pratt & Whitney Wasp Juniors, of which it has now

Engine overhaul shop scenes below include a table containing all of the nearly 5,000 parts of an R-985 engine, a new monorail conveyor carrying engine parts, and a new 35-ft. infra-red baking oven in which newly-painted engine parts are baked.



Scenes above, from left to right, show a part of the final assembly section in Southwest's enlarged engine shop, a group of overhauled engines awaiting monorail movement to test cells, and an engine being moved into a test cell. Southwest overhauled 2,105 engines in 1953.

Southwest's recently-completed modernization program included expansion and re-equipment of its instrument overhaul laboratory. On white table is Eclipse-Pioneer equipment for overhauling and testing latest-type electrical gyros and fluxgate compasses.

overhauled more than 8,000 units in recent years. Its customers include private aircraft owners throughout the western hemisphere, several airlines, an aircraft manufacturer using Southwest-overhauled Juniors in its new airplanes and the Air Force. The shop is an authorized representative of both Pratt & Whitney and Wright Aeronautical Corp.

The new Southwest engine shop establishes a straight-line production flow, an overhead monorail system moving power plants through an overhaul set-up resembling a complete engine factory — from tear-down through painting booths and baking ovens and into a battery of modern test cells. Over half of the firm's 400-odd employes work in its engine shop.

Along with expansion of its engine overhaul facilities, Southwest has revamped and re-equipped its aircraft instrument laboratory in adherence to factory recommendations and specifications. It is a major distributor for the Eclipse-Pioneer Division of Bendix Aviation Corp., and its new facilities are specialized for the overhaul of

(Continued on page 40)

Instrument shop scenes below include dynamic balancing of a gyro rotor as it spins at 10,000 rpm., drilling of small holes for balancing rotors, and torque testing of instrument bearings.

Vacuum-type gyros are serviced and tested on this elaborately-equipped bench at Southwest. Left to right are a bearing race lapping motor, a dual pitch and roll tester for directional gyros, a 360-deg. turn gyro test stand, a small arbor press, a surface plate for pivot resurfacing and a gyro test stand and flow meter.

—(Southwest Photos by Tom W. Collins.)

Nine Lear distributors who received "Hundred Grand" sales trophies for 1953 are shown above. By the numbers and left to right in the pictures are: (1) Maurice Fraser of Canadian GE, Ltd., Toronto and William P. Lear; (2) Gene Tumbleson of Capitol Aviation, Springfield, Ill., and Jerry Ehle of Lear; (3) Ehle with Art Binard and Jimmy Van Atta of Servair of Detroit; (4) W. E. Richards of Atlantic Aviation, Hasbrouck Heights, N. J., and Ralph Lehman of Lear; (5) George Otis of Lear with Jack Baumann of Santa Monica Aviation; (6) Ernie Williams of Aircraft Sales, Ft. Worth, with Bob Wolin of Lear; (7) Wolin with Norm Blake of Aircraftsmen, Inc., Oklahoma City; (8) Larry Hunt of Air-Oasis, Long Beach, with Henry Hamm of Lear; (9) Lazare Gelin of Lear International Export, New York, with Ralph Lehman of Lear.

Payoff For Lear Plan

ONE of commercial aviation's hardest-hitting sales campaigns is doubling and tripling sales for distributors of Lear aircraft radio, autopilots and navigation aids. Called the "Hundred Grand Plan," the campaign was devised by Don Fairchilds, Lear sales promotion and advertising manager, and tried experimentally on several "guinea pig" distributors by Fairchilds and Lear Sales Manager Henry Hamm before being placed in operation last year.

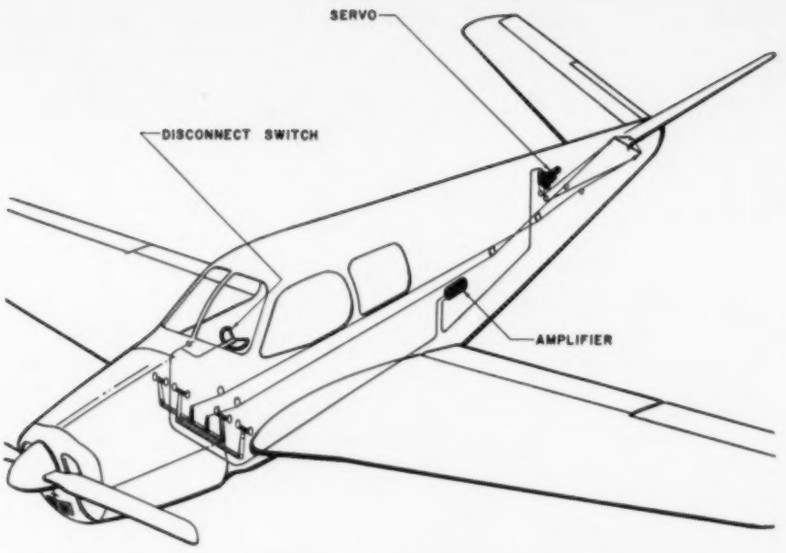
"In 1952, before the plan was operated, only one of our distributors had been able to go over the $100,000 mark in sales," said George Otis, Lear vice president and general manager. "In 1953, with the plan operating, 9 distributors pushed Lear sales past the hundred grand goal, increasing their sales 200 to 300 per cent. In addition, 14 other Lear distributors just barely missed the hundred grand mark."

Lear's "Hundred Grand Plan" is a neatly packaged "how to do" merchandising and sales drive under which Lear salesmen train distributors and their dealers in a full-scale consumer-type merchandising program. In detail, it demonstrates step by step ten profit formulas: (1) How to prospect for dealers, (2) how to organize and conduct sales meetings, (3) how to make flight demonstrations, (4) how to convass planes on airports, (5) how to use time payment, (6) how to prepare publication advertising, (7) how to use direct-mail advertising, (8) how to employ a sign and emblem program, (9) how to obtain local publicity and (10) how to handle merchandising and display. Lear factory representatives have carried the program to distributors with personal demonstrations in the use of the sales and demonstration aids.

An example of the workings of the campaign is the story of a Michigan operator, who sold less than $20,000 in the first seven months of the year. After a Lear sales demonstration team visited him in July, the operator signed up dealers, used Lear ammunition and demonstration ideas, and sold over $80,000 worth of equipment in the last five months of the year to top the hundred grand mark.

Lear expects to triple its number of Hundred Granders in 1954. ★ ★ ★

The Arcon Yaw Stabilizer

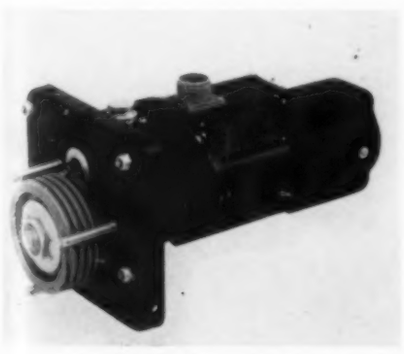


Schematic diagram showing a typical Arcon installation in a Beechcraft Bonanza. The yaw stabilizer's disconnect switch is located on the control column but pilot can override the servo if desired. —(Lear Sketch.)

CALL it what you will, an anti-spiral aid, a yaw damper, a turn control unit, a heading control, a yaw stabilizer, or simply a steering aid, a new Lear, Inc., single-axis flight control instrument, the "Arcon" fills the bill. The name Arcon means automatic rudder control. Roll the above terms together and they add up to directional stability. And directional stability spells doom to that most deadly of all unintentional flight maneuvers, the "graveyard spiral."

Ask any oldtime pilot about the "graveyard spiral." When weather conditions cause a pilot to lose visual contact or to go on instruments without adequate training, he's almost helpless to correct the turn or spin into which the inherent directional instability of any airplane will lead him. "Seat of the pants" flying won't help. The resulting continuous spin has killed more than enough pilots to earn the above funereal appendage.

With Lear's new Arcon, costing about $595 and weighing less than 12 pounds, any light or medium airplane can be insured against this deadly maneuver. The Arcon is easy to install and operates automatically. It can be cut into or out of the flight control mechanism by simply flipping a switch. It is a single-purpose instrument, designed to dampen the tendency of the airplane to oscillate about the yaw axis.



Arcon Servo assembly.

Basically, the Arcon is a rate gyro-servo combination which senses any directional change, then makes appropriate rudder corrections to return the airplane to a straight line of flight attitude.

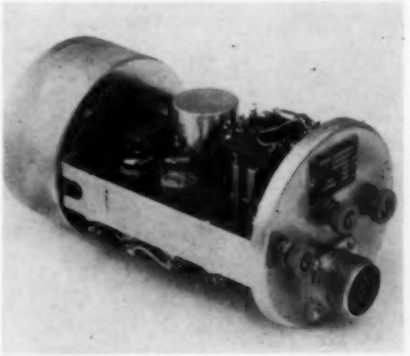
Other yaw stabilizers have preceded the Arcon. Some are the relatively heavy, extremely expensive types used in military aircraft, or the yaw stabilizer popularly known as a "bang-bang" type of instrument, which is an off-or-on, yes-or-no combination operated by positive switch contact. The Arcon is a *proportional* instrument in that the amount of rudder control applied is directly proportional to the amount needed to offset the spin and return the airplane to a straight line-of-flight attitude. It is said to be smoother than the "bang-bang" type of device, which often over-controls, then must reverse itself in a series of repetitive actions.

The Arcon incorporates four principle components — the rate gyro with its AC motor, the amplifier, a servo motor driven by current from the airplane battery and driving in turn a small alternator which furnishes AC current for the gyro motor, and a pair of opposed iron particle clutches. The design of these clutches makes proportional control possible. Each clutch is geared to the same capstan. One clutch becomes energized at the expense of the other and in proportion to the amount of signal current reaching it. The energized clutch then takes over and spins the capstan in one direction while the idling clutch is spun against its normal rotational direction.

The capstan, in turn, is connected into the rudder control system so that rudder control force is applied in the direction required to stop the airplane from spinning.

The rate gyro operates at about 20,000 rpm. on a spin axis parallel to the longitudinal axis of the airplane. When this longitudinal airplane axis is altered by a turn, the spin axis of the gyro is altered at the same time. A gyro has a tendency to tilt when its spin axis is altered. In the Arcon, the amount and direction of this gyro tilt is sensed by a pair of opposing coils with a variable air gap in the flux path of each. The tilt of the gyro causes the air gap in one coil to grow narrower, the air gap in the other coil to grow wider. Thus one coil becomes more highly energized at the expense of the other, with the difference in voltage directly proportional to the difference in air gap magnitudes. This difference in voltage,

(Continued on page 38)



Slightly larger than a quart milk bottle, this Arcon amplifier and AC motor-driven rate gyro assembly features printed-circuit construction and is calibrated for each individual installation.

ECONOMY, SAFETY, COMFORT and PERFORMANCE...

a PIPER tradition

Throughout the years all Piper models have excelled in the true Piper tradition of **economy, safety, comfort and performance.** The widespread public preference for these outstanding qualities is evidenced by the fact that in 18 out of the last 20 years Piper has led in personal aircraft sales.

Today's Pipers with their speed, range and utility continue to fulfill the Piper pledge to give the Piper owner more for his flying dollar.

• Ask one of the firms listed to demonstrate how one of the Piper models can save you valuable time and money. These firms are prepared to serve all your aircraft requirements.

Arizona

ANDERSON AVIATION COMPANY, INC.
Sky Harbor Airport
Phoenix

Louisiana-Mississippi

LOUISIANA AIRCRAFT
Municipal Airport
Baton Rouge, La.

Oklahoma

SMYER AIRCRAFT SALES & SERVICE
Municipal Airport
Ponca City

Texas

BROWN FLYING SERVICE
Municipal Airport
San Antonio

JACK ROBINSON FLYING SCHOOL
Meacham Field
Fort Worth, Texas

SOUTHWEST AIR RANGERS
International Airport
El Paso, Texas Midland, Texas

JUST AMONG OURSELVES

(Continued from page 13)

Even the most die-hard of the Pentagon die-hards might find such figures illuminating and somehow get the idea that after all there just might be a better way of doing some things.

MORE FALSE ECONOMY IN THE CAA

THE Civil Aeronautics Administration continues its drastic program of reducing facilities and services with the announcement that it plans to discontinue 36 communication (INSAC) stations out of the nation's 416. No doubt some of the stations could be eliminated without affecting aviation too adversely, but we are unable to determine just where such stations are located. Most of the stations with which we are familiar and which are listed for discontinuance seem to us to be important stations from an air safety and airplane utilization standpoint. Once again it appears on the surface that the CAA under the new administration is practicing the same old game of economy for economy's sake. Air safety is of secondary importance.

Here again we have a clear-cut case of reducing services that primarily affect the itinerant, non-scheduled airman. A few stations dropped in each region are not going to affect the airlines or the military. An airways system comprising only one-half the INSAC stations now in operation probably would suffice to adequately service the big airplane people. But the little airplane people, the owners and users of some 25,000 to 35,000 active cross-country airplanes, are the ones who get the axe, as usual.

It is apparent that economy is the main consideration. But since the CAA needs to "justify" its cuts, it says the INSAC stations picked for discontinuance were chosen on the basis of "work load." The work load criteria is a flimsy one if aviation safety is to be taken into account. There is no possible way the Washington budget-cutters can figure any relationship to air safety by the number of contacts an INSAC station makes. Geographical location, weather conditions, growth factors and airplane utilization in the area — all these factors do apply and should be taken into consideration. Any cross-country pilot will tell you he will sometimes fly all day long without calling an INSAC station but will use the vital information these stations broadcast throughout the length of the flight. Work load should be a low priority

PICK PIPER FOR ECONOMY

READ WHAT PIPER OWNERS SAY ABOUT PIPER ECONOMY

★ ★ ★

ARIZONA BANKER—"We can operate our Piper on the same mileage allowance as for cars and save considerably because overnight expenses are greatly reduced."

★ ★ ★

ILLINOIS MANUFACTURER—"Quick trips both ways the same day eliminate overnight and other expenses. In addition we find our mileage costs by Piper are actually a little less than in a car."

★ ★ ★

PENNSYLVANIA CHAIN STORE PRESIDENT—"Our travel costs have been reduced 40 per cent by Piper."

Costs $2,000 Less . . . Operates far more Economically than any other Four-Passenger Production Airplane . . .

These four people have just finished a 425 mile flight in their quiet, comfortable, over 120 mph Piper Tri-Pacer. Their gas bill is $9.65! Yet that's just part of the amazing economy story of the Tri-Pacer, most widely purchased 4-place plane on the market today.

First of all, the Tri-Pacer costs $2,000 less than any other 4-place plane in quantity production; *less than half the price of any other with modern, tricycle landing gear.* That means far lower depreciation, and insurance. Lowest maintenance, too, helps bring over-all costs down to a level comparable with auto travel.

But the real economy which alert businessmen and farmers enjoy is their saving of time. They spend more time on the job rather than travelling to it. And overnight expenses are greatly reduced.

Economy is just one reason why you'll pick Piper. Performance, flying ease and comfort will please you too. See your Piper dealer or send for details today.

SEE WHY SO MANY

Pick PIPER

Piper Aircraft Corporation
Lock Haven, Pennsylvania Dept. 4-F

A special brochure on operating costs has been prepared to give you the facts on Piper economy. Send for it today.

NAME.....

ADDRESS.....

CITY..... STATE.....

☐ Please send new full-color brochure on the Piper Tri-Pacer and Pacer.

☐ Please send brochure on Tri-Pacer operating costs.

☐ If under 18, check for SPECIAL brochure with photos, drawings of all Piper planes.

Always Ready To Go

Hundreds of Cessna owners all over the country depend on the Authorized Cessna Service Stations listed below for their transportation needs—Authorized Cessna Service is their assurance that business planes are always ready to go, always in top condition for reliability, performance and comfort.

Every Cessna owner is guaranteed three important things by our factory-supervised Cessna Flat Rate Service:

(1) You get an accurately quoted price and time-required quotation based on hundreds of job studies covering virtually all maintenance needs.

(2) You get genuine Cessna parts and factory-trained workmanship.

(3) You save money and time and we stand behind every job for your fullest satisfaction.

To make the most of your Cessna's usefulness, visit the Authorized Cessna Service Stations listed below.

These progressive Cessna Authorized Service Shops offer flat-rate service.

Aircraft Sales Company
Meacham Field
Fort Worth, Texas

Aviation, Inc.
15th Street Air Park
Tulsa, Oklahoma

Champ's Flying Service
Municipal Airport
El Paso, Texas

Clinton Aviation Company
Stapleton Airfield
Denver, Colorado

Cruse Aviation, Inc.
Municipal Airport
Houston, Texas

Dal-Tex Aviation, Inc.
Highland Park Airport, Dallas, Texas

Hair Flying Service
Harding Field
Baton Rouge, Louisiana

Howard Aero Service, Inc.
San Antonio International Airport
San Antonio, Texas

Ragsdale Flying Service
Municipal Airport
Austin, Texas

Southwestern Skyways, Inc.
New Municipal Airport
Santa Fe, New Mexico

Kenneth Starnes Aviation Service
Adams Field; Little Rock, Arkansas

West Texas Flying Service
Midland Airport
Midland, Texas

Yingling Aircraft, Inc.
Municipal Airport
Wichita, Kansas

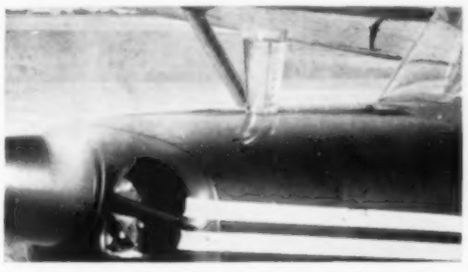
Only the Cessna 170 Offers

All-Metal Construction, World's Safest, Smoothest Landing Gear, 15 Other Exclusive Features For Only $8295

Cessna 170 Aircraft Company

1▶ Smooth 6-Cylinder Power

Cessna is the only airplane in the low-price field that offers you a powerful 6-cylinder, 145 H. P. engine! It cruises over 120 m.p.h. yet it's so smooth, quiet, vibration-free that when the engine is running you can rest a glass of water on the cowling without disturbing the contents!

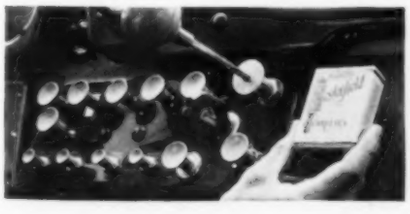


2▶ The Landing Gear that "Gives"

Cessna's exclusive landing gear flexes outward and upward to absorb the shock of rough fields. It's simple in design, has no moving parts, requires no maintenance!

3▶ Compact Control Panel

All controls are grouped within handy 6" reach of the pilot's hand. There's a new sloping map compartment, room for 2 extra radios, 8 additional instruments. Attractive non-glare instrument panel is evenly illuminated by dual non-reflecting lights.

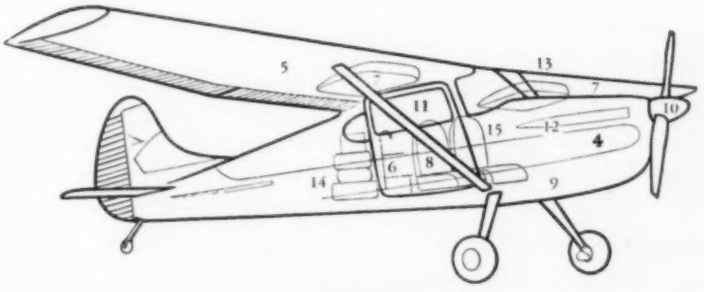


All-Metal—All Beauty

With minimum care, your Cessna 170 will look as factory-fresh in 5 years as it does today! Metal greatly increases over-all airplane strength, adds extra economy, utility, resale value, affords best protection against weather, lowers maintenance. Cessna 170 is the only all-metal airplane in the low-price field, sells for only $8295! For more information, see your nearest Cessna dealer (listed in the yellow pages of your telephone book) or write CESSNA AIRCRAFT CO., DEPT.FM-6,WICHITA, KAN.

Cessna 170 Extras—All Standard!

. . . Undisputed Proof That Cessna 170 Is Your Best Buy In The Low-Price Field!



4▶ 145 H. P. CONTINENTAL ENGINE
5▶ "PARA-LIFT" FLAPS
6▶ 120-LB. LUGGAGE CAPACITY
7▶ 42-GALLON FUEL CAPACITY
8▶ SOFT, FOAM-RUBBER SEATS
9▶ 6-OUTLET HEATING AND VENTILATING SYSTEM
10▶ METAL PROPELLER
11▶ *FULL* 4-PLACE COMFORT
12▶ SHOCK-MOUNTED INSTRUMENT PANEL
13▶ DIRECT-READING FUEL GAUGES
14▶ CARGO TIE-DOWN RINGS
15▶ STALL WARNING INDICATOR

4 GREAT CESSNAS 170 180 195 310 THE COMPLETE AIR FLEET FOR EVERY BUSINESS NEED

MESSAGE TO AN ENGINEER THINKING ABOUT THE FUTURE— HIS FUTURE

Take a few moments now to review the progress of your career. Does your present position offer you a future that fully utilizes your creative abilities?

Compare your present assignment with the diversified, stimulating pursuits that increase the inventive challenge of Fairchild's team of qualified engineers. These men are working on engineering advances for the famous C-119 Flying Boxcar and the soon-to-be-produced C-123 Assault Transport. More than that, they are developing tomorrow's jet fighters . . . special reconnaisance aircraft . . . jet bombers and transports. The men at Fairchild know that *planned* project diversification keeps them in the forefront of the field of aerodynamics.

Gracious country living only minutes away from urban Baltimore or Washington . . . paid pension plan . . . an excellent salary with paid vacations . . . ideal working environment . . . generous health, hospitalization and life insurance . . . and the many other benefits of a progressive company add to the pleasure of working with Fairchild.

You'll be investing wisely in a secure future if you take time today to write to Walter Tydon, Chief Engineer, outlining your qualifications. Your correspondence will be kept in strict confidence, of course.

ENGINE AND AIRPLANE CORPORATION

FAIRCHILD

Aircraft Division

HAGERSTOWN, MARYLAND

consideration in knocking out INSAC stations.

The healthy postwar growth of general aviation, particularly in executive and industrial flying, has been in a large part due to advances in aviation radio and electronics. Impair the communication facilities that have made this growth possible and aircraft utilization will decline. Every airman should study the situation and get in touch with his congressman. The CAA "welcomes" comment but we doubt very much whether an individual's opinion makes any impression in a poker game where the cards are staked.

NEW McCARRAN BILL

EVERY individual and trade association concerned with civil aviation progress should read and ponder Senate Bill 2646 introduced by Senator Pat McCarran of Nevada and intended to replace the Civil Aeronautics Act we've been operating under since 1938.

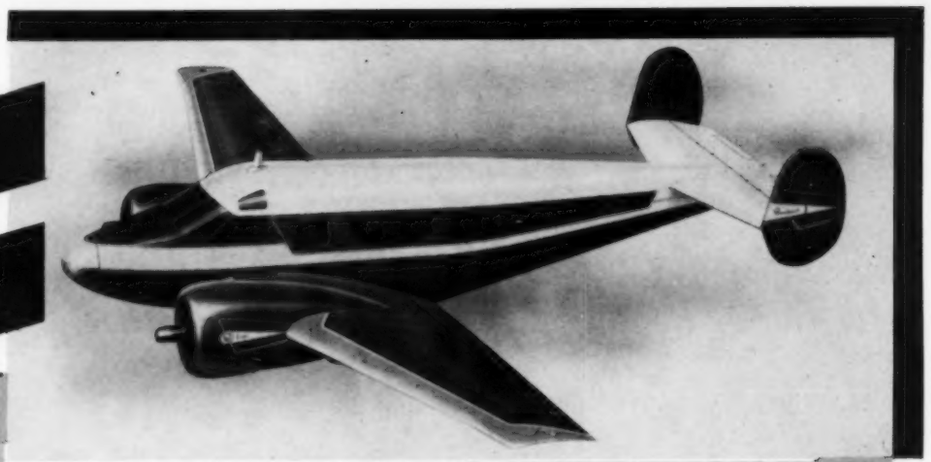
While the Congress might not take any action at this particular session, most competent observers believe that our basic civil aeronautics act is in for a complete overhaul and the McCarran proposal is the first important document to reflect the pressure now building up to get the show on the road.

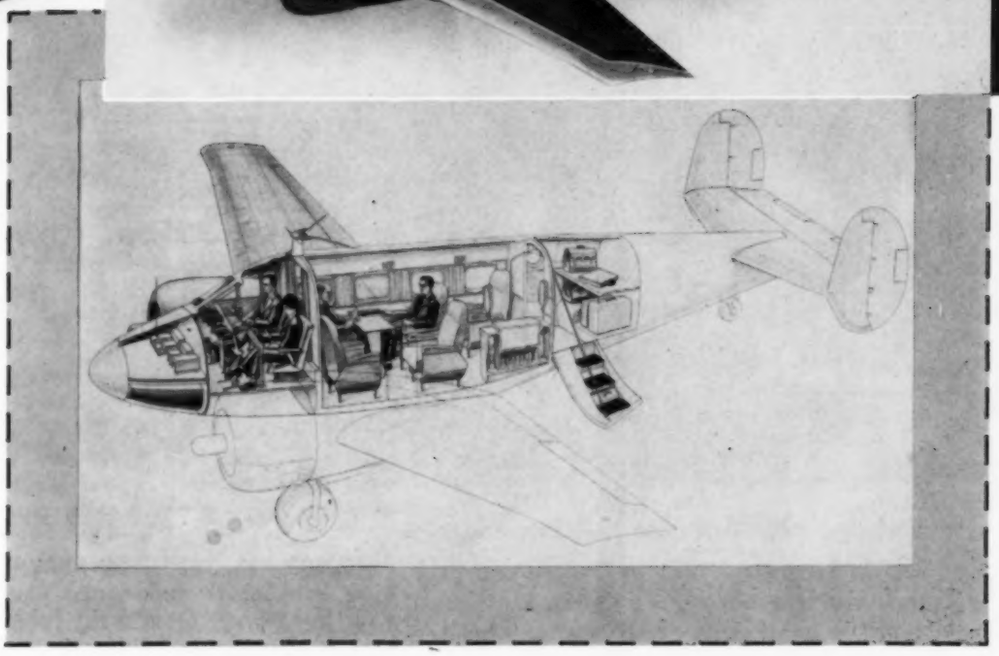
Unrest is growing in many channels over the trend of Federal policies towards civil aviation. This publication has always felt the Act of 1938 was basically sound and workable but that it was so loosely written and so flagrantly circumvented aviation progress always has been at the mercy of individual interpretations of constantly changing administrators and boards. A lot of people are unhappy about the fact that since 1938 no permanent certificates have been granted to new passenger carriers in the domestic trunk business, and very discontented over the lack of experimentation and hand-to-mouth operations under the experimental certificates granted to local service carriers. Abandonment of Federal airport development and other time-tested developmental functions of the CAA is proving a sore spot with many congressmen and civic leaders.

The McCarran Bill would re-create an independent Civil Aeronautics Authority and independent Air Safety Board. It proposes so many changes from the present set-up we believe it should be studied and debated thoroughly if for no other reason than self edification. ★ ★ ★

A NEW ADDITION TO THE DISTINGUISHED BEECHCRAFT LINE OF FINE AIRCRAFT

SUPER 18 TRANSPORT





MORE PERFORMANCE, MORE USEFUL LOAD AND MORE COMFORT MAKE THE NEW BEECHCRAFT SUPER 18 TRANSPORT A WORLD LEADER

Designed and developed to serve business users who want the ultimate in safe, comfortable and fast air transportation the Super 18 fills every requirement. With a cruising speed of 215 mph. and a range of 1,120 miles, distance is transformed into hours saved in travel time. The roomy comfort makes long trips a pleasant experience.

Truly a masterpiece in planning, the Super 18 offers a built-in baggage rack, big rest room compartment, refreshment bar and new improved cabin seats. The new large cabin door opens down and contains built-in stair-steps. These are but a few of the many refinements that make the Super 18 the best buy in its field today.

J.D. REED CO., Inc.
SALES SERVICE
Beechcraft
DISTRIBUTOR
MUNICIPAL AIRPORT
HOUSTON, TEXAS

Owning a Beechcraft is a paying proposition. We invite you to let the J. D. Reed Company prove it with facts, figures and a demonstration. A phone call or letter on your company letterhead will bring complete details.

Close Inspection

BEECHCRAFT CERTIFIED SERVICE offers many extras to the aircraft owner — extras that do not appear on the service or maintenance bill. But these little extras mean a big saving through the year.

A good example of one of these extras is the CLOSE INSPECTION your airplane receives while it is being serviced on the ramp of a BEECHCRAFT CERTIFIED SERVICE STATION. Trained service personnel will spot — and call to your attention — any mechanism that is not functioning properly thereby eliminating costly repairs later.

BEECHCRAFT CERTIFIED SERVICE technicians, with their long Beechcraft experience and factory training, know your Beechcraft from front to rear. But most important, they take a personal interest — and pride — in seeing to it that your Beechcraft serves you well.

So when your Beechcraft requires service — bring it to one of the BEECHCRAFT CERTIFIED SERVICE STATIONS listed — where it's always *"in good hands."*

AIRCRAFTSMEN, INC.
Will Rogers Field
Oklahoma City, Oklahoma

ALAMO AVIATION, INC.
Municipal Airport
San Antonio, Texas

ANDERSON AIR ACTIVITIES
General Mitchell Field, Milwaukee, Wisc.
Truax Field, Madison, Wisc.

ATLANTIC AVIATION CORP.
Teterboro Airport, (25 minutes from Times Square)
Teterboro, New Jersey
Logan Airport, East Boston, Mass.

ATLANTIC AVIATION SERVICE
New Castle County Airport, Wilmington, Delaware

BUTLER CO., AVIATION DIVISION
Municipal Airport, Chicago, Ill.

CURREY SANDERS AIRCRAFT CO., INC.
Downtown Municipal Airport, Shreveport, La.

CUTTER-CARR FLYING SERVICE, INC.
West Mesa Airport, Albuquerque, New Mexico

GRAY AIRCRAFT SVC. CO., INC.
D. A. Cody, Service Mgr.
Love Field, Dallas, Texas

HUNTER FLYING SERVICE, INC.
Hunter Field, Cedar Rapids, Iowa

ROD MORE AVIATION SERVICES
Cuddihy Field, P. O. Box 556,
Corpus Christi, Texas

OHIO AVIATION COMPANY
Dayton Municipal Airport, Vandalia, Ohio

PACIFIC AIRCRAFT SALES CO.
Oakland Airport, Oakland, California

ROSCOE TURNER AERONAUTICAL CORP.
Municipal Airport, Indianapolis, Ind.

J. D. REED CO., INC.
Municipal Airport, Houston, Texas

TOPEKA AIRCRAFT SALES & SERVICE
Municipal Airport, Topeka, Kansas

TRADEWIND AIRPORT CORP.
Tradewind Airport, Amarillo, Texas

TULSAIR DISTRIBUTORS, INC.
Hangar 5, Municipal Airport, Tulsa, Oklahoma

WINGS, INCORPORATED
Wings Field, Ambler, Pennsylvania
Philadelphia International Airport, Philadelphia, Pa.

To obtain the best service for your Beechcraft visit the Certified Beechcraft Service Stations listed.

Give Yourself Time

More time for *work* – *more* time for *pleasure*, too!

You have heard the expression, "Time has run out on him." It usually means that someone's important or even lifelong plans were spoiled because of an insufficiency of time.

No one can buy an extra minute of time, at any price; but you can *save* time from normally uninteresting activities, such as transportation of yourself from place to place.

The time saved can be spent on the things you want to do most. Your family can enjoy more of your company. Your pet charitable activity can profit by more of your attention. Your business can be run more efficiently, with less lost motion. Or, you can even save a little time for relaxation and recreation at your favorite hideaway area.

BEECHCRAFTS are the Air Fleet of American Business. Thousands of them are in use by the most wide-awake and aggressive corporations and individuals for the purpose of saving time. If you find yourself "pressed for time," you owe it to yourself to investigate how a BEECHCRAFT can be made a hard-working partner in your activities. If you give yourself a BEECHCRAFT, you really are giving yourself time.

Beechcraft

Beech Aircraft Corporation
Wichita, Kansas, U. S. A.

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

ARCON STABILIZER

(Continued from page 29)

called "error voltage," is then impressed on the amplifier and signals the amount and direction of change required.

This original signal is amplified to the point where there is sufficient current, from 2 to 6 mils, to energize the proper magnetic clutch. The energized clutch then transmits power from the servo motor to the capstan, causing it to turn in the direction indicated by the original gyro signal. A control cable from the capstan then applies corrective pressure to the proper control cable, and the airplane is returned to a straight line of flight attitude.

While in use, the Arcon has no "on" and "off" conditions. The powered or servo motor end of the opposing clutches are in constant rotation. But neither clutch transmits power to the capstan end unless it becomes energized. And the amount of power that is transmitted to the capstan by the energized clutch is always proportional to the strength of the signal originated by the gyro. This signal diminishes in strength as the airplane returns to a straight line of flight attitude, so when the airplane is once again flying straight, there is no gyro signal originating, and the speed of the capstan has reduced to zero. Thus there is no tendency to over-control, necessitating a reversal of the operation.

The Arcon can be installed in any convenient space. A good location is in the aft baggage compartment, adjacent to the rudder control cables. A master switch on the instrument panel controls its "on" and "off" operation. A momentary contact switch, usually mounted under the left thumb position on the control wheel, is used to disconnect the instrument during intentional turns. However, an over-riding clutch is incorporated in the capstan, and additional pressure on the rudder controls will permit a normal turn with the Arcon in the "on" position.

K. M. Miller, LearCal's chief engineer, is careful to point out that the Arcon should not be confused with an automatic pilot. "The instrument will not hold the airplane on a fixed course," Miller says. "It has no 'memory' itself, and cannot return the airplane to its original flight line. Its

Skilled hands at Aircraftsmen, Inc. are always ready for complete engine overhauls!

For Twin Beech: R985-14B Pratt & Whitney engines with major o'haul— exchange or sale. Shipped or installed in Aircraftsmen's own shops.

How many hours of faithful service has that Continental engine given you? Better check — it may be time to rejuvenate it! Prolong the life of your Continental and continue the fine performance that was built into it . . . put it in skillful hands at Aircraftsmen for a complete overhaul. Aircraftsmen's Repair Station is fully approved by CAA for overhauling *all* series of Continental aircraft engines. Write today!

Specially designed for Bonanzas: auxiliary fuel tanks, map and thermos cases, curtains, visors, breather oil separator, aileron trim controls.

CAA Approved Repair Station 289

Aircraftsmen Inc.

Box 2516 • MElrose 8-6338 • Will Rogers Field • Okla. City

sole purpose is to damp and control the magnitude of oscillations around the yaw axis, and thus prevent continuous, uncontrolled turning."

Miller points out however, that LearCal is planning to offer a directional gyro as an accessory for the Arcon. With this accessory, the instrument will hold the airplane on a relatively constant heading. ★ ★ ★

T-CRAFT WORK PLANE

(Continued from page 23)

good idea of what the airplane can demonstrate. Here's what happened:

"On Run No. 1, with 590-lb. useful load, the airplane was off in only 405 ft. and cleared a 50-ft. obstacle in 515 ft.

"On Run No. 2, with 1,038-lb. useful load, it was off in 525 ft. and over a 50-ft. obstacle in 675 ft.

"On Run No. 3, with 1,256-lb. useful load, it was off after a run of 610 ft., clearing a 50-ft. obstacle in 815 ft.

"On Run No. 4, with useful load totaling 1,483 lbs. and including a payload of 1,101 lbs., it was in the air after a run of 825 ft., clearing a 50-ft. obstacle in 1,045 ft.

"On Run No. 5, with 1,650-lb. useful load including 1,281-lb. payload, the airplane was off after a run of only 875 ft., and cleared a 50-ft. obstacle in only 1,185 ft.

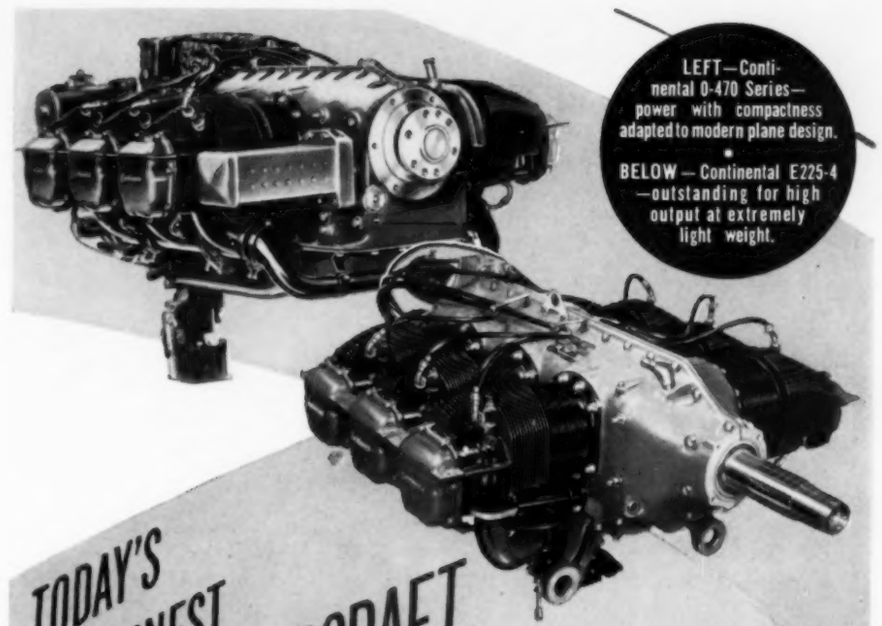
"During these tests, outside air temperature was 54 degrees and all take-offs were made in 90-degree cross-wind, the wind varying from 10 to 20 mph. All take-offs were made from 3-point attitude with full flap, full throttle and high rpm., although temporary propeller governor difficulties limited rpm. to only 2,400. This provided only 190 hp. The runs should be shorter with higher rpm. and 225 hp. as authorized. Elevation of the Beaver County Airport is 950 above sea level."

Taylorcraft advertises the following figures for its 225-hp. model:

Length, 24 ft., ⅛ in.
Span, 36 ft., 4¾ ins.
Height, 7 ft. 1 in.
Empty weight, 1,510 lbs.
Gross weight, 3,015 lbs.
Useful load, 1,505 lbs.
Fuel capacity, 57 gals.
Rate-of-climb, 925 fpm.
Stalling speed, 40 mph.

Take-off from sod field with no wind at standard atmosphere and gross weight, 875 ft., clearing 50-ft. obstacle in 1,275 ft.

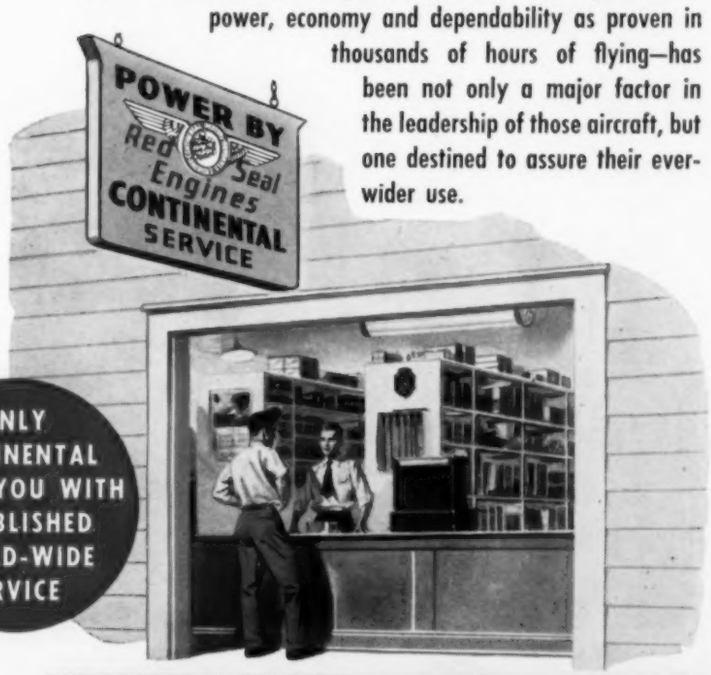
Wing area, 186 sq. ft.
Wing loading, 16.2 lbs. per sq. ft.
Power loading, 13.4 lbs. per sq. ft.
The 225-hp. Continental engine has



LEFT—Continental O-470 Series—power with compactness adapted to modern plane design.
•
BELOW—Continental E225-4—outstanding for high output at extremely light weight.

TODAY'S FINEST EXECUTIVE AIRCRAFT FLY WITH THIS DEPENDABLE POWER

Behind the growing dependence on airplanes as adjuncts to business is the fact that for company after company they are more than paying their way. As pioneer and leader in utility aircraft power, Continental Motors finds solid satisfaction in its role as engine source for the outstanding planes of this type. It has every reason to believe that the performance of these engines—their power, economy and dependability as proven in thousands of hours of flying—has been not only a major factor in the leadership of those aircraft, but one destined to assure their ever-wider use.



ONLY CONTINENTAL BACKS YOU WITH ESTABLISHED WORLD-WIDE SERVICE

Continental Motors Corporation
Aircraft Engine Division
MUSKEGON, MICHIGAN

a power take-off for spray pump in the agricultural model.

Flaps and ailerons are interchangeable on the airplane.

The two versions are called "Topper" for the agricultural model and "Ranch Wagon" for the cargo model. They differ only in treatment of the cabin interior and door arrangement. The Topper has two front doors, each with upper and lower plexiglass areas, and single stick for pilot seating on the center of the front seat. Its rear cabin compartment is lined with flame-resistant butyrate fabric which is easily removed and replaced for hopper or chemical tank installation.

The Ranch Wagon has two front doors and a rear door on the right side. A fourth cabin door can be installed on the rear left side in place of the window. The pilot sits on the left and the position normally occupied by the right front seat is available for cargo in addition to the rear cargo compartment.

Standard equipment is listed as including engine, Hartzell constant-speed, controllable-pitch, all-metal propeller, air speed indicator, altimeter, ammeter, tachometer, manifold pressure gauge, oil temperature gauge, oil pressure gauge, electric fuel gauge, compass, mixture control and idle cut-off, navigation and instrument lights, battery, generator, starter, parking brake, toe brakes (Cleveland hydraulic brake system), stick control, leatherette seat cushions, shoulder harness attachments to longerons, interchangeable flaps and ailerons, full-swivel tail wheel, and slotted wing tips.

Robert Galvin, factory sales manager, describes the 225-hp. Taylorcraft as extremely spin resistant with full aileron control throughout the stall. No cruising speed was mentioned in the announcement but the 225 is expected to cruise at about 130 mph.

Taylorcraft also has three other models, a 4-place 145-hp. Tourist at $6,790, a 2-place 85-hp. Sportsman at $4,255 and a 2-place 65-hp. Special Deluxe at $3,060. ★ ★ ★

In Malaya and Pakistan
THE AGRICULTURAL
Beaver
RUGGED AND EFFICIENT
Spray Beavers
have a capacity of 200 imperial gals., (240 U.S.), a swath width of 90 feet and the ability to spray 18 acres per minute with coverage up to 10 gals. per acre, with density from fog to raindrop. Are helping to control nature's agricultural hazards . . . thus aiding in the economic restoration of Asia.
With 1C.D. Rotor Brush or Boom and nozzle equipment.
WE WELCOME YOUR INQUIRIES.
D547A
DESIGNED AND MANUFACTURED BY
THE DE HAVILLAND AIRCRAFT OF CANADA LIMITED
POSTAL STATION L TORONTO ONTARIO

BIGGER SHOPS

(Continued from page 27)

gyro rotors, bearings and advanced instruments recently introduced to flying. For its equipment, Southwest acquired Eclipse-Pioneer's most up-to-date testing and overhaul devices and its instrument personnel were trained in factory procedures. Also expanded were its facilities for custom-designing and building aircraft panels for executive airplanes. Its radio and electrical shops were reorganized for the promotion of efficiency and economy. Southwest has also completed a new and enlarged customers lounge, completely air-conditioned and equipped with a flight operations room for executive pilots use of its direct telephone lines to the Dallas radio range, the Carswell Air Force Base flight control center, local telephones, work desks and information bureau.

Southwest Airmotive's fiscal year ends May 31, and it expects its 1953 sales will have grossed more than $5,000,000. These included some 3,500,000 gals. of aviation fuel dispensed on its 30-acre paved aircraft parking ramp. ★ ★ ★

VTO FIGHTERS

(Continued from page 21)

will pilot the Convair XFY-1 in its test-flights, "would be like trying to hit a dodging humming bird with a rifle."

He stressed the versatility such a design concept offers. "It'll fight, fly, land and take-off like a humming bird," Coleman said. "No other plane ever built can approach it for maneuverability and change of pace. It can go from a hover to fighter speeds in seconds."

Herman R. (Fish) Salmon, Lockheed test pilot who will conduct flight tests with the Lockheed VTO, has taxied it on special landing gear adapted for the purpose. He said he has never handled an airplane "as powerful" as the XFV-1. Salmon has flown the most powerful Lockheeds yet built, including experimental tests

with wing-tip ram jets at very high speeds.

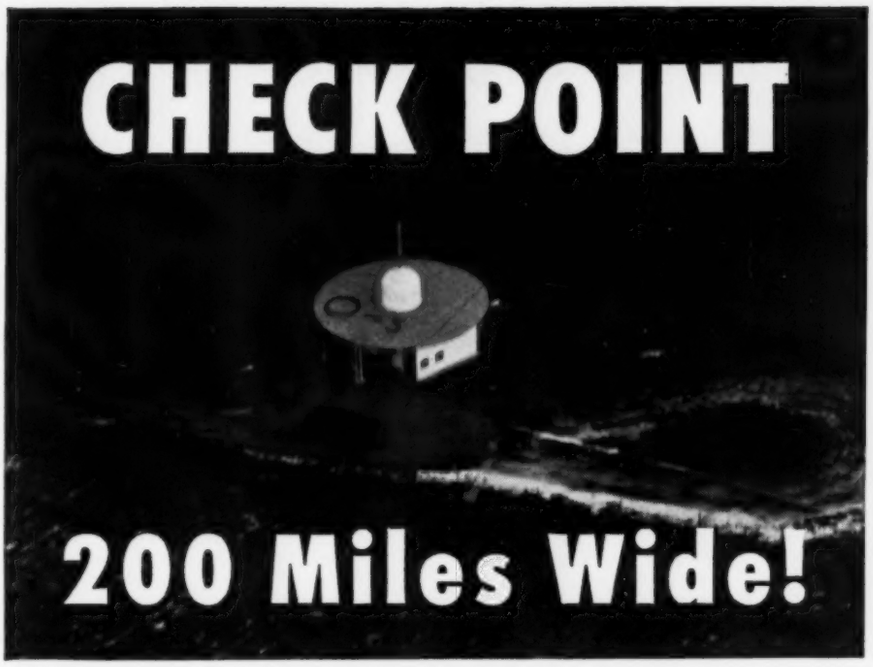
Lockheed's program calls for horizontal take-off when taxi-tests are completed. Salmon will then fly the VTO in level attitudes, eventually developing his own technique of entering vertical flight at slow speeds to hang it on its props in mid-air with plenty of altitude to jockey it around in. Vertical take-off will then follow, with vertical landings being undertaken after take-off is mastered.

Convair's experimental presumably will not be fitted with special gear for conventional take-off. Instead, the company has rigged an ingenious tethering rig inside a huge hangar. This rig will suspend the plane vertically from a cable attached to the nose. Other cables will run from the wing and fin tips down to the hangar floor. Tension on the cables will be adjusted so that the plane will respond to Coleman's throttle, but the ship will never be out of control from the ground. After weeks of tether tests, Coleman will take the plane into the air, fly it and land it — presumably using vertical take-off and vertical landing.

The problems Coleman and Salmon will face can be readily anticipated: What will be the wind effect on the vertical take-off track? How effectively will control forces operate to correct trim at hovering or very low speeds in case the airplane tips, moves sideways or revolves? What emergency landing procedure is available in case of partial or complete power loss?

Many advantages are obvious: Small-size launching and landing sites should eliminate the need for runways and carrier decks. Practically any Navy combat vessel may be able to carry its own fighter escort. All-weather take-offs and landings should be more practical than with conventional fighters. Elimination of conventional landing gear should simplify aircraft production requirements.

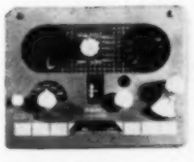
"The XFV-1 points the way to the day when nearly all fighter planes will take-off vertically," says Hall Hibbard, Lockheed's engineering vice president. "It will be a flying laboratory to prove and check a large number of new techniques and devices required for vertical flying." His statement said the VTO fighter can "streak away at speeds approximating 500 mph. and land on a dime by backing straight down onto a plot of ground about the size of a tennis court or even onto the deck of a seagoing ship. With this type of plane, virtually all Navy ships could be able to carry their own aerial protection. A convoy could put aloft an umbrella of defense in a matter of minutes." ★ ★ ★



Imagine a check point 200 miles in diameter! That's just what this VOR Omni station is when your airplane is equipped with dependable Narco Omni equipment. Not just a spot on the ground but an electronic check point you can "see" as much as 100 miles away—giving you position information as reliable as the most prominent lake, railroad or other visual check point.

Creating reliable, accurate, low-cost Omni equipment for the average pilot is a pioneering achievement of Narco. To enjoy this simplified, peace-of-mind system of navigation, install the latest Narco equipment in your airplane. Choose it with confidence because

NARCO LEADS in OMNI SALES

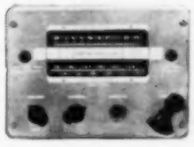


OMNIGATOR. Finest single-unit Omni system available. Exceptionally accurate. Also operates on ILS localizer and VAR. 8-channel transmitter: 108-127 mc receiver plus 75 mc marker beacon.

Narco has built and sold more Omni systems for business, farm and personal airplanes than all others combined! They're rugged, self-contained and packed with performance. See your nearest dealer.

SUPERHOMER. Most popular Omni system-4-channel transmitter, 108-127 mc receiver, plus vernier course selector. Only 10½ pounds. A remarkable, low-cost navigation and communications package.

ALSO THESE FINE NARCO COMMUNICATIONS UNITS



SIMPLEXER. 12-channel wide-band VHF transmitter, 108-127 mc receiver with famed Narco "whistle-stop" tuning. Ideal auxiliary communications equipment; gives you those extra channels for simpler radio operations.

LFR-1. LF range and broadcast receiver. Compact, pancake design. Loop adapter switch available. Plugs into any Narco VHF unit. Weighs only 35 ounces.

Rely on *narco*

NATIONAL AERONAUTICAL CORPORATION
AMBLER, PA.

Fast Baggage Handling

Fort Worth International Airport boasts that deplaning airline passengers usually receive their baggage as soon as they reach the claim counter. These pictures show the operation. Battery-powered baggage tractors meet planes and tow baggage trucks 650 ft. to the counter, including a 75-ft. ramp up a 13-degree grade to the terminal's second floor. Gould-battery-powered tractors are used because of reduced hazards from sparks. Batteries are charged without removal. Seven trucks operate between 4-6 p. m., four from 6-12 p. m., two until 8 a. m., and 4 during morning and early afternoon. —(Gould Battery Photos.)

Questions and Answers for Airport Operators

Small-Town Self-Help

QUESTION: People in our town are getting a little sick of airplanes and pilots. We have a small turf strip—there is no operator, no manager but we have four individually-owned T hangars, four airplanes and about 11 pilots. Town officials have been pretty diligent in keeping the strip mowed and in shape. One plane is owned by a club with 8 members. The other three are owned by individuals. Two of us frequently use our aircraft for business purposes.

Our trouble stems from the owner of the other individually owned aircraft. He's a very competent pilot and has an instructor's rating. But he is adept at breaking ordinary rules of safety. He persistently, though not frequently, shows off by low flying and I've heard he's done some buzzing. Since three of the airplanes are of the same make, they all look alike to the layman and we get blamed for what the one does. We have no local rules or regulations and if we had them we wouldn't have anybody to enforce them. Nobody wants to file a violation against this guy. What can we do with somebody like that?

ANSWER: There are probably a dozen different ways to straighten out that gent before the undertaker does. If you were to ask eleven people you'd get eleven different answers. So we'll give ours—one we like and have seen work in a big way.

From your letter it appears you have a fair amount of interest in flying in your town. You men who own your airplanes and use them in business have found airplanes to be useful tools in turning another buck. Let us ask you one thing. Have you ever offered to help the club of eight members in their problems? Do you take any interest in them at all? We'll lay a wager that this club includes some members who are operating on a student certificate, trying to build up time. Probably got their dual from some nearby operator or from some member of the club with an instructor's rating.

Among the members may be two or three who will eventually find aircraft so useful they'll become owners themselves if encouraged to do so. So you say what's that got to do with your problem? Just this—you've got eleven people with enough interest to own part or all of an airplane and there may be a dozen more in your town. You've got, therefore, a beginning and a good one upon which to build if good direction is provided.

First, we'd invite our buzzing friend, plus the other individual who uses his own airplane for business flying, plus one of the leading club members, over to your house for a little get-together some evening. On a basis of your desire to promote interest in flying and to get better acquainted with all the people who participate in aviation in your town, suggest a local flying association for social, aviation, self-help and community interest. Suggest that if all the others are interested, every current or ex-pilot in the community be invited to attend an organization meeting and ask each to bring along a friend who might become interested in flying.

Let your friend with the bad habits

Chief Pilot Bacastow at the controls of a Douglas DC-3. The ship is one of a fleet of four operated by the F. C. Russell Company, world's largest manufacturer of combination screen and storm sash.

Ask the men with the most experience . . . ask

C. F. Bacastow

With more than 15 years of flying experience and over 8,000 flight hours, Chief Pilot Bacastow is a confirmed user of Gulf Aviation Products. He tells you why:

"Though we are currently logging about 3,500 flight hours a year (1,300,000 passenger miles), we have never had a single flight cancelled for mechanical reasons. No wonder we've learned to count on Gulf. Where they are available, my company uses Gulf Aviation Products exclusively."

3 good reasons to FLY WITH GULF!

Gulf Aircraft Engine Oil, Series-R

For radial engines, or where a detergent oil is not desired. Approved by Pratt and Whitney and other radial engine manufacturers for all types of service. Retards sludge and carbon formation and retains its body at high operating temperatures.

Gulfpride Aviation Oil, Series-D

For horizontally opposed and Ranger in-line engines. Minimizes ring and valve sticking, oil consumption, oil-screen clogging and plug fouling. Users of this great detergent oil have actually increased periods between engine overhauls by as much as 100%.

Gulf Aviation Gasoline

It's "refinery-clean," because Gulf Aviation Gasoline dispensing equipment is equipped with advanced Micronic Filters.

Gulf Oil Corporation
Gulf Refining Company

GULF
AVIATION PRODUCTS

24 LEADING WORLD AIRLINES HAVE SELECTED TURBO COMPOUNDS
THAI AIRWAYS CO. LTD.
selects TURBO COMPOUNDS
to bring ultra-modern service to ancient trade routes
with LOCKHEED Super CONSTELLATIONS
CURTISS-WRIGHT
CORPORATION • WOOD-RIDGE, N. J.
World's Finest
Aircraft Engines

take as much a part in it as you can get him to take. Push him, if necessary. Get him elected an officer if you can. And, by the way, make the dues low and spend them on refreshments and a good time at meetings.

School-boy stuff? No. If you can do what has been suggested, you've got a prime start on the first objective—promotion of interest in flying. The by-products are important and chief among these is a project of keeping your field and its users in the good graces of the community. Don't be too obvious about it, but if your man starts to work with neophytes and less-experienced pilots, he'll take a good look at his own conduct, too.

In other words, it's a solution through self-policing. We've seen one organization of over a hundred pilots scattered over a dozen fields, which so improved the conduct of its mem-

at 9000 feet over Mexico City—on one engine

A HARTZELL Propeller Made it Possible

"The use of Hartzell full-feathering propellers is a prime factor in the Aero Commander's ability to meet this high standard of performance."

That was Aero's comment on the test, pictured at the right, in which an Aero Commander had no difficulty maintaining altitude with one propeller feathered while flying at 9000 feet over tropical Mexico City.

The Hartzell full-feathering, constant-speed propeller is the simplest model available, and the lowest priced. No auxiliary equipment other than a governor are required for its operation.

Write today for complete details on this propeller. If you fly a single-engine airplane, ask about the highly efficient Hartzell constant-speed propeller.

HARTZELL
PROPELLER COMPANY
DEPT. F PIQUA, OHIO

ers that there has been no trouble at all in the area. It's a lot better than seeing violations filed or watching the local sheriff trying to figure out how low somebody is flying and straining his eyes to get the number.

Obligations Under Federal Aid

QUESTION: As a new airport manager, I've got a lot to learn. I'm getting along pretty well, though. Yesterday at a meeting of the city council, a proposal was submitted by a firm in another state to lease one of the hangars on the field for non-aeronautical purposes on a long-term lease. This hangar is one we haven't needed for aviation, but we may need it in a year or so. The city attorney called the council's attention to this but the lease price is very attractive and the city attorney had a tough time postponing immediate action.

It appears this lease might be a violation of compliance. Now, where do I find out what may or may not be a violation of compliance?

ANSWER: From your short letter, we gather the hangar is one which may have been acquired by your city as surplus property from the federal government under the terms of a quit-claim deed or other instrument of transfer.

Compliance probably is not the best word to describe the thing it stands for and we know a lot of people who swear at it. It is a natural trait of American character to rebel against restrictions. We couldn't give a full set of rules, cases and examples of the reservations and restrictions that affect property acquired as your hangar was without over-running our space.

We suggest this: If your files do not contain copies of all the various documents under the terms of which federal grants were obtained, get the city clerk to find the originals in the records and make copies so you can have them and become familiar with them. There may be one or more that applies to your field. Principally, they are these: If your field was developed in the early Forties under programs of federal development known as "Development of Civil Landing Areas" and "Development of Landing Areas for National Defense," there will normally exist a "Resolution Constituting Agreement" known as an AP4 agreement.

If such a field, having been leased

Why Wait?

DELIVERY **TODAY**

—In our own name
—In our own hangars for your immediate inspection

Why Pay Brokers?

Dove
Autopilot
VHF, OMNI, ILS, ADF, LF
Executive Interior
Traded on Super-92 DC-3

D18S Hydromatic
Autopilot
OMNI, VHF, ADF, Etc.
Traded on Super-92 DC-3

REMMERT-WERNER, Inc.
Lambert Field St. Louis

Super-92 DC-3
New ship guarantee, complete 8000 hour overhaul, Super-92 engines, Collins radio, beautiful custom interior, 200 miles per hour. Today's finest executive air transportation. Exterior paint color and design to your own preference.

DC-3
Compartmented R1830-94 Executive ...$150,000
Special Wright Powered Executive ....$ 88,000

BONANZAS
New Demonstrators
Used, Trade Ins

MALLARD
Complete Executive Interior
Janitrol Heat, Ship-shore phone, etc.
Complete Executive radio
Omni VHF ILS ADF MHF LF
Traded on Super-92 DC-3

— Buy Direct From The Owner —

No fees, commissions, or kickbacks
We carry our own inventory and fulfill our own responsibilities

Air Tour to Mexico City

A Texas Private Fliers Association air tour to Mexico City recently attracted 39 planes and more than 70 members, who were joined en route by 20-odd private planes from Wisconsin. The tour's route was down the Gulf of Mexico beach via Brownsville with an overnight stop and entertainment at Tampico. Some of the planes are shown above at Tampico. A weekend full of entertainment and tours kept the air tourists busy in the capital city, with the Aero Club of Mexico and Mexican civil aviation officials as hosts. TPFA officials in charge included President M. C. (Pappy) Martin, Treasurer Mary Helen Miles and J. O. (Toots) Womack. Mexican honors to TPFA members at a banquet included a trophy in recognition of 25 years of flying by Jimmie Kolp of Electra, one of the Southwest's leading lady pilots. We went along with Barney Dosterschill in his new Bonanza, flown all the way without a bobble by his new Lear autopilot.—T.A.

by the government, or a field owned and developed by the government as a military airfield, was conveyed or if any property on it or elsewhere was conveyed to your city under the Surplus Property Act of 1944, as amended, there will be some form of document called a "Quit-Claim Deed," "Agreement" or "Instrument of Transfer." These take different forms, some being known as Regulation 16 deeds and others described as Public Law 289 deeds, using the word "deed" as a generally-descriptive term.

If your airport has been the recipient of a grant-in-aid under the Federal Aid Airport Act of 1946, that aid was granted under the terms of a "Grant Agreement" in which the obligations of the owning agency are defined and in which certain "Sponsor's Assurances" were stipulated. These, too, take different forms.

If your city has taken federal aid under such programs as WPA there may be some obligations assumed in those projects.

Since there are variations in the agreements and since some fields may have more than one type of agreement depending on its history and evolution, get the copies of those which your city entered into. Read them carefully. If you don't understand them, consult your Airport Division or District Office of the CAA. Under Public Law 311, the CAA is the compliance agency.

Don't look at the reservations, restrictions and conditions as unwarranted interference with your prerogatives. In fact, in many ways those reservations, restrictions and conditions can be an airport manager's best friend. They give him backing in fighting the granting of exclusive rights for areas which must be used in common and this is based on Sec-

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SEABOARD & WESTERN AIRLINES
selects TURBO COMPOUNDS
to give new meaning to the words "fast freight" with
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ion 303 of the Civil Aeronautics Act of 1938. For the most part, they include restrictions against discrimination, hazards, dissipation or diversion of airport property and assets, and provide for public use and maintenance of facility responsibilities. They usually protect the continued public use and ownership of the airport. Those things are in your interest, too.

Look them over. If you are still having trouble, contact your CAA man.

Note: We had a recent call that Georgetown, Texas, will be looking for an operator for its municipal airport in June. It has paved runways, a hangar and an attractive, small ad building. If you are interested, contact Lee C. Black, city manager.

Personals

First assignment for ART HOOK, former CAA airports director who recently joined the Los Angeles engineering firm of Pereira & Luckman, is to participate in the master planning for new air and naval bases to be built by the U. S. in Spain. Hook is now on the job in Spain. . . . JAMES E. MOONEY, former manager of the Washington office of the CAA's airport management and operations service, is doing public relations and airport consultant work in Washington representing communities with their problems in CAA, CAB and the military, along with preparing CAB hearing exhibits for cities and commissions. His address is 5135 Manning Drive, Bethesda, Maryland. . . . New manager at Brownsville International Airport on the Texas-Mexico border is FRANK HENGGLER, who fills the vacancy left by the recent death of T. CRIXELL.

★ ★ ★

LINDBERGH

(Continued from page 13)

human efficiency in figures of mass production, but how are we to evaluate mass production, say in such spiritual elements as faith and joy, compassion and courage? We know when we have won a victory in war, but how can we subtract our losses and find the product of that victory in terms of future cultural and hereditary strength?

Human character consists of a fluctuating balance of qualities which we attempt to describe with such words as "physical," "mental," "emotional," "spiritual." Emphasis or repression of any one of these qualities has a major effect on all the rest, and the result can carry on for generations. As this is true with individuals and families, it is true with communities and nations, the one react-

Here is new lightweight equipment for ground or shipboard communication with aircraft, or other uses, such as air-ground operation in oil or mining prospecting. The set may be fastened in place in aircraft and connected to an aircraft antenna to supplement the airborne equipment already installed, for special work. The ARC Type 12 operates on a 24 volt power source – the only additional equipment required. 118-148 mc. Both transmitter and receiver are easily portable, in a rugged carrying case. Complete weight, packed, is only 37 lbs. With its sectionalized antenna, it can be set up and be on-the-air in a few minutes.

Assembly consists of ARC Type R-19 Receiver and choice of Type T-11B or T-13A Transmitters, all widely used by Army, Navy and Air Force. Distance range is 50 to 100 miles with aircraft at 3,000 to 10,000 feet. Write for detailed description.

Dependable Airborne Electronic Equipment Since 1928

ARC Aircraft Radio Corp
BOONTON, NEW JERSEY

executive aircraft of the month

A Custom Redecoration and Modification

CONVERSION NUMBER 96

Redesign of the interior using old and new materials, made this into a finer aircraft. Custom EAS seats and headlining were added for comfort and beauty. New 1350 HP engines and rudder were installed for safety and efficiency. The customer is satisfied. Our best recommendation is a customer who is satisfied.

L. V. EMERY, President

EXECUTIVE AIRCRAFT SERVICE, inc.

P. O BOX 7307 • DALLAS, TEXAS • (GARLAND AIRPORT)

Complete "Flying Farmer" Runway Lighting Package

Everything you need for 2000-foot landing strip, runway, or taxiway $600

Includes 18 stake-mounted runway units with clear lens; 12 threshold units with green lens; yellow cones, lenses, lamps, control switch, Penta-treated stakes, 10,000 feet plastic-covered No. 10 copper wire for direct burial.

Now you can make safer landings in darkness, dust, or fog with a dependable, electric-lighted runway system that costs only 30¢ per runway foot for materials.

Install it yourself. Just plow 6-inch furrows for cable, drive stakes for the units, hook up to regular 115-volt AC power. Needs no transformers. Lamps are 15 watt (105 lumens), giving 27 cp output.

This is a highly effective system, made by the makers of the famous Thermal Beam (TM) high-intensity lights for larger airports.

Also available: "Flying Farmer" kits for 2500- and 3000-foot runways. Mail coupon for complete information.

LINE MATERIAL

Airport Lighting LM

(A McGraw Electric Company Division) 152

MAIL THIS COUPON

Line Material Co. Airport Lighting Division, Milwaukee 1, Wisconsin FM44

Please send me free folder on "Flying Farmer" runway lighting packages.

Name.....

Business.....

Address or Route.....

Town.....*State*.....

ing on the other, slowly, while conditions change with years. We speak of the physical stamina of Russia, the rationality of France, the vivaciousness of the Italian, or of India's mysticism.

We think of peoples noted for their tendency toward war or peace, regimentation or individualism, industry or agriculture; and in each case the over-emphasis of one quality results in weakness in another. A regimented Germany overruns an individualistic France, to be hurled back by the agrarian endurance of Russia, and decimated by America's industrial production. But the physique of Russia lacks the mentality for freedom, while the increasing industrialism of the United States has left many men and women questioning the system which creates it. In the time dimension, survival depends upon the balance we maintain; strength is catabolic without wisdom for direction, and the sermons of Christ become as essential as the steel of Bessemer to our power.

Man is born with qualities of body, mind, and spirit. No system can maintain the utmost power unless it gives all his faculties free play. Most of us remember when the requirements of living enforced a more balanced life. Not many years ago, the efficiency and specialization demanded of us today were impossible. As a lawyer, my father harnessed a horse to carry on his business. As a young pilot, I unlashed my wings from fence posts, and pulled through my own propeller. But my father and I knew the feel of rain and the smell of the ground, and there was time for our thoughts to wander. When night came, our muscles put our brains to sleep.

Now, modern standards require an efficiency which immobilizes the muscles and the senses while it overactivates the brain. Think how tightly we bind our flesh to chair and bench in order to support our intellect's excursions! We insulate man more and more from his old environment of earthy weather. We design him into closed automobiles, commuters' trains, and air-conditioned buildings. Yet we all know that lethargy of body slants the reason of the mind. In aviation, this trend has been particularly clear. As speed and completed schedules improved, pilot and engineer alike lost touch with the hayfield's sun. The yielding sod of early days gave way to concrete aprons, while open cockpits were streamlined into fuselages until our cheeks no longer felt the turbulence of air.

In aviation, our old, carefree fascination with the art of flight has metamorphosed into a responsibility for the welfare of mankind and the security of our American people. On the one hand, it has become our mission to maintain rapid intercourse between all nations. On the other, it is our duty to construct the world's greatest military force. To our skill is entrusted the terrifying power of the atom bomb. Our aircraft have to navigate with extreme accuracy, over long distances, at projectile speeds, and in stratospheric altitudes.

This responsibility involves a life of dedication and discipline, for the "know-how" it requires is immense. Youth must specialize in technical training. Daylight hours of adult years must be spent beside machines, drafting boards, and desks. Here, we meet the basic question of how deeply and how long man can consecrate himself to his machines without losing the human qualities essential even to effective consecration.

American aviation has accepted the responsibility for material power. From the standpoint of short-term survival, the confidence placed in our science and industry has been justified through the performance and the numbers of our aircraft. But our very success in the field of material power silhouettes problems of human power which confront us. War, strikes, and political unrest have flamed on all our speed-compressed horizons. From the standpoint of long-term survival, what is our regime of life doing to our people? As in other fields of modern enterprise, our responsibility for hu-

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man power is still too vague of concept.

During decades of industrial development, western man has taken himself for granted while he concentrated his attention on his material creations. He now wakes rather suddenly to find his security dependent on the machine organization he has built, with his civilization threatened by its products. He comes to the increasing realization that he has not kept inward pace with his outward actions.

This mid-century generation we represent stands on amazing accomplishments, but faces alarming problems. We have wiped out a city with a single bomb, but how can we use this fact to heighten our civilization? We build aircraft by the tens of thousands in our factories, but what will our factories build in the character of their personnel — not only in our generation, but in our children's, and their children's? We tie all countries close together, put each doorstep on a universal ocean, but how are we to direct these accomplishments to improve the basic qualities of life? In emphasizing force, efficiency, and speed, are we losing a humility, simplicity and tranquility without which we cannot indefinitely hold our own, even in worldly competition?

These are the problems of human power, of long-term survival upon earth. We have shown what man can make of science. Now it is a question of what our scienctific environment will make of man, for an environment effects the form and thought of each new generation. To date, the results of science have been primarily materialistic. We have measured success by our products rather than by ourselves. A materialism which overemphasizes short-term survival detracts from the humanism essential to long-term survival. We must remember that it was not the outer grandeur of the Roman, but the inner simplicity of the Christian that lived on through the ages.

I have stated a problem. You have the right to ask for a solution. I believe the solution lies in each individual, through the standards he holds; that it lies not in political parties or radical movements, but in human values and gradual trends; not in a greater complication, but in a greater simplicity of life. In other words, I believe that the solution lies within ourselves, and that we can find it nowhere else. Our parties, movements, laws, and codes are important, but they are only outward manifestations of our inward values. The excessive materialism of the modern world is a reflection of the excessive materialism in modern man. Nothing is gained by attacking the reflection; we must concentrate on the source; and in doing so, we can be successful only by bringing to our assistance the factors of trend, faith, and time.

Unexpanded by the time dimension, flattened on a momentary, mental screen, the chaos of our modern world is staggering. We watch assemblies and conferences bog down until we realize that man has not the wisdom to solve his problem by any sweeping, detailed plan. But when we add the scope of time, and release in it the catalyst of faith, the future clarifies, and we see that, within the bounds of natural law, man's destiny is shaped by man's desire. We desired a mechanistic civilization; that set the trend, and we achieved one. To achieve a civilization based on human values requires the desire within ourselves. If we actually have that desire, our scientific, industrial, and military forces will fall, automatically, into line behind it, supporting with material strength the human qualities essential to over-all power and permanent survival.

But we must have more than an intellectual desire, filed away in the archives of idea. It must enter the roots of our being until it shapes our action instinctively as well as through the conscious mind, until we see the producer as more important than his product, and find it no sacrifice to renounce material standards of success — until we realize in our bones as well as in our brains that the character of man still forms the essential core of a lasting civilization.

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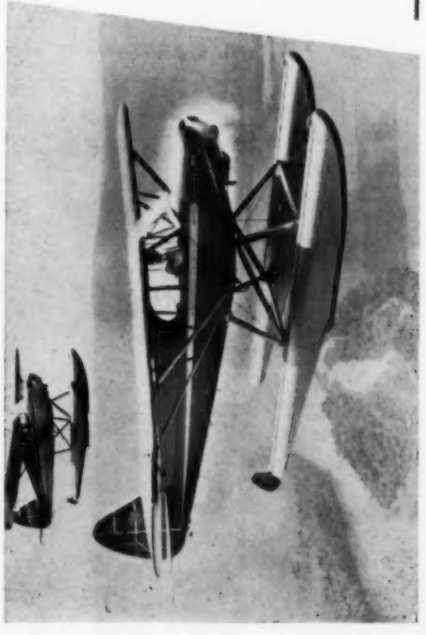

GROSS WEIGHT OF THE CONVAIR B-36J HAS BEEN INCREASED TO 400,000 LBS., as compared to the 358,000-lb. gross weight of the previous production model. The "J" presumably will be the last model of the B-36, production of which is scheduled to end in late 1954 at Fort Worth. In tests preceding the increase in weight, company test pilots took the bomber on repeated high-speed runs along the runway with its landing gear crossing logs as large as 4 ins. in diameter.

EXPERIMENTAL PLASTIC GLASS LAMINATE WINGS on an Air Force T-6 trainer have successfully completed preliminary flight tests at the Air Research and Development Command's Wright Air Development Center, Dayton, Ohio. Similar wing panels had previously been ground-tested only, but the new wings received 1,000 hrs. of flight testing. They were constructed by East Coast Aeronautics, Inc., Pelham Manor, N. Y., a subsidiary of Barium Steel Corp.

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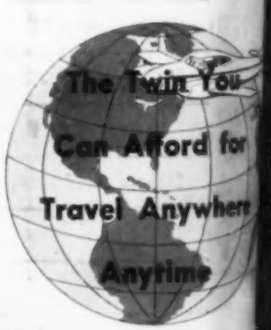

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